



Comprehensive Rural Health Services Project, BALLABGARH

Centre for Community Medicine

The All India Institute of Medical Sciences, New Delhi

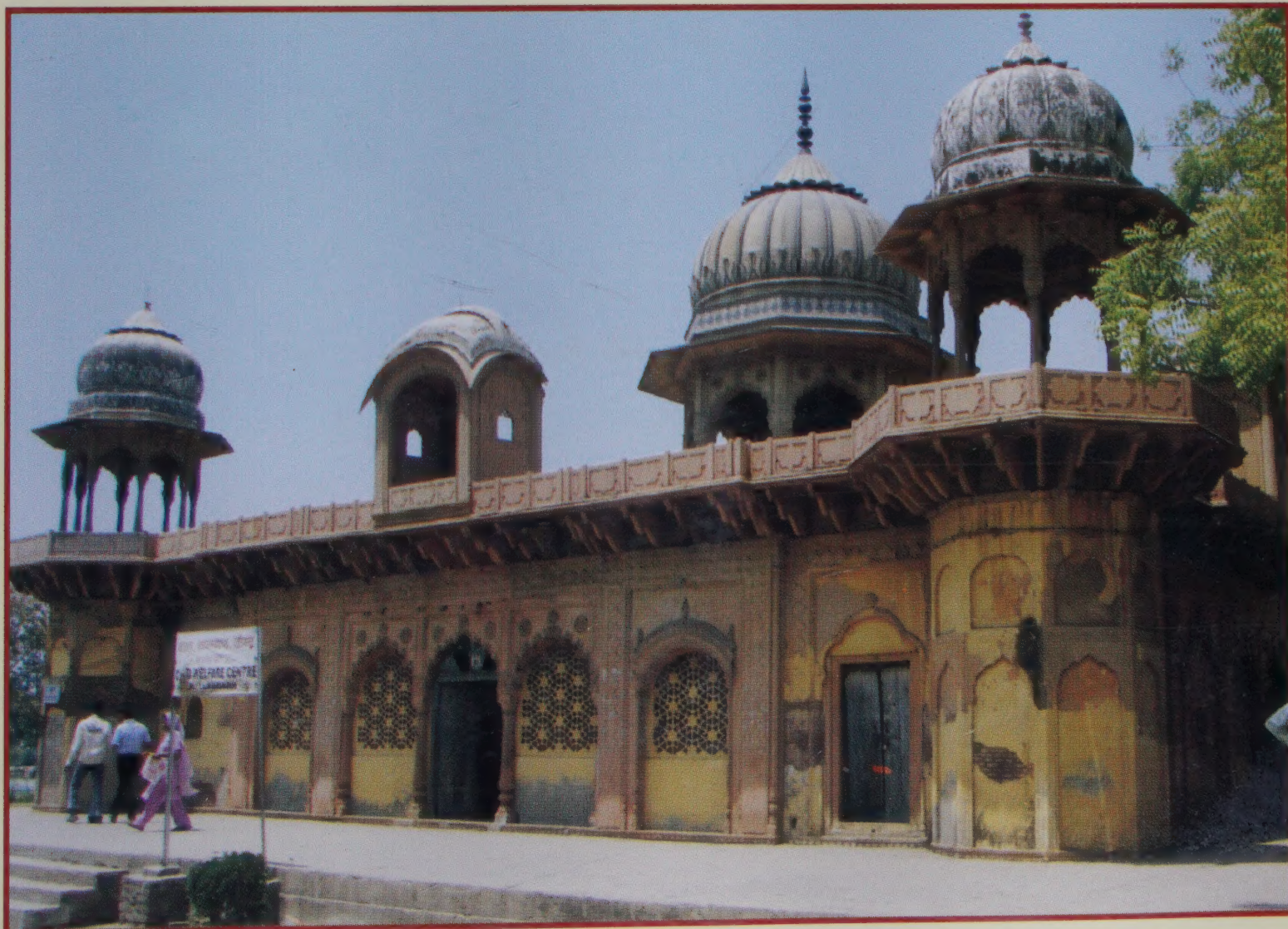
A Collaborative Project

between

The All India Institute of Medical Sciences, New Delhi

and

Government of Haryana



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Conceived and compiled by

K. Anand

With contributions from

***L. M. Nath
S. K. Kapoor
C. S. Pandav
Bir Singh
Shashi Kant***

***Sanjeev K. Gupta
Kiran Goswami
Puneet Misra
Sanjay K. Rai***

***Baridalyne N.
Y. S. Kusuma
Kapil Yadav
Prashant Jarhyan
Ritvik***

March, 2008

***Centre for Community Medicine
The All India Institute of Medical Sciences
New Delhi – 110029, India***

Cover ***“Rani ki chattri” CRHSP, Ballabgarh***

Back cover

Top Left **Incumbency Board at CRHSP, Ballabgarh**

Top Right **Incumbency Board at Centre for Community Medicine, AIIMS**

Bottom **Ballabgarh Family Photograph**

Cover design

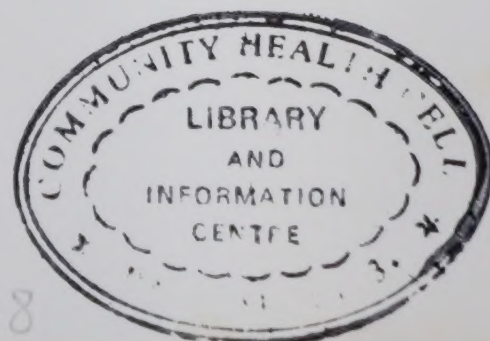
Ramachandra Pokale

Secretarial assistance

Namita

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*Thank you for your valuable contribution in formative years
and efforts towards growth and development in subsequent
years*

Holmes Junior

T.D.Chablani

H.C. Patnaik

George Joseph

J.R.Bhatia

Prema Bali

J.S.Gill

Shakuntla Bhatnagar

S.M.Bharel

V.P.Reddaiah

Jenifer Lobo

Go to the People;
Live among them;
Love them;
Learn from them;
Start from where they are;
Work with them;
Build on what they have.

But of the best leaders,
When the task is accomplished,
The work completed,
The people all remark:
“We have done it ourselves”

Lao Tsu (600B.C — 531B.C)

This poem is a translation from Tao Te Ching (Book of the Way)

Acknowledgements

There are two essential elements for building an institution like Comprehensive Rural Health Services Project, namely a visionary leadership and a responsive community.

We have been extremely fortunate to have both of them at the right time and the right place. There is no doubt that the vision of the people who set up the project at Ballabgarh and the team of people who converted that vision into reality are primarily responsible for what it is now. It also goes to their credit and to the teams that followed them, that the torch has been carried forward. Today, we are at the cross-roads, looking at how we can enlarge that vision and also continue to keep it as a cohesive and well functioning unit.

We have also been extremely lucky to get such a hospitable and receptive community. A community which has allowed us to experiment, to learn as well as to teach. Obviously, we would have no success to show for our efforts if the community did not appreciate our efforts and respond wonderfully to all that we did. While it has not been roses all the way, the thorns were the lessons that our faculty, residents, interns and field staff needed to learn as essential part of their development as individuals and professionals.

We hope the partnership grows in the coming years and inspires generations after to carry on the torch of learning.

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Foreword

When we conceived the idea of compiling a book on Ballabgarh, it was to set right two of our common failings. The first is that we do not really acknowledge the contributions of our founders and pioneers in an appropriate way and second that we do not document our work well. Initially, we had proposed to basically compile all the research work done in Ballabgarh with a preface by Dr. Nath and Dr. Kapoor. It was to be a labour of love for me as well as a tribute to the place and people who have shaped my thinking. The contributions from Dr. Nath and Dr. Kapoor forced me to rethink the contents of the book. It brought home the point forcefully (not that I did not know before) that Ballabgarh is much more than its academic achievements. The memories of Ballabgarh are far stronger and powerful. Also, I am not the only one but the “lady” Ballabgarh has many more suitors and is large hearted enough to satisfy all of them. In the end, the book became a symbol of what Ballabgarh had always represented – a Team work. I am sure we will have more editions of this book in future. If not me, someone else will do it. I would really welcome if any other “Ballabian” wishes to contribute to the future editions of this book.

Anand Krishnan

बल्लबगढ़ - एक संक्षिप्त परिचय

पृष्ठभूमि

बल्लबगढ़ परियोजना की स्थापना सन् 1965 में पंजाब सरकार, अखिल भारतीय आर्युविज्ञान संस्थान (आ०भा०आ०स०) और रॉकफेलर फाउंडेशन के बीच त्रिपक्षीय समझौते पत्र पर हस्ताक्षर से हुई। इस परियोजना के मुख्य लक्ष्य थे :

- शोध और कार्य से संपूर्ण स्वास्थ्य सुविधाओं का एक ऐसा ढाँचा बनाया जाए जिसे देशभर में लागू किया जा सके।
- पूर्वस्नातक और स्नातकोत्तर विद्यार्थियों को ग्रामीण प्राथमिक स्वास्थ्य देखरेख के बारे में जानकारी देकर उन्हें प्रशिक्षण दिया जा सके।

सिविल अस्पताल बल्लबगढ़

इस परियोजना का मुख्यालय आ०भा०आ०स० से लगभग 35 कि०मी० दूर दिल्ली-फरीदाबाद-मथुरा राजमार्ग पर बल्लबगढ़ शहर में स्थित है। आ०भा०आ०स० का एक वरिष्ठ आचार्य इस परियोजना का प्रभारी होता है। हरियाणा सरकार की तरफ से वरिष्ठ चिकित्सा अधिकारी इस परियोजना का नेतृत्व करता है। जबकि सम्पूर्ण प्रशासनिक जिम्मेदारी आ०भा०आ०स० की होती है। यहाँ पर सभी विशेष सुविधाएँ जैसे स्त्री रोग विशेषज्ञ, शिशु विशेषज्ञ, शल्य चिकित्सा विशेषज्ञ, चिकित्सा शास्त्र विशेषज्ञ, चक्षु विशेषज्ञ और संवेदनाहरण विशेषज्ञ उपलब्ध है। आ०भा०आ०स० के वरिष्ठ रेजिडेन्ट्स एवं कनिष्ठ रेजिडेन्ट्स और इंटरन डॉक्टर की सहायता से सुविधाएँ प्रदान करते हैं नर्सिंग और अन्य कर्मचारी आ०भा०आ०स० और हरियाणा सरकार दोनों की तरफ से उपलब्ध कराये जाते हैं।

बाह्य रोगी सुविधा

यहाँ पर रोजाना दन्त चिकित्सा, टीकाकरण क्लिनिक और अन्य विशेषताओं की बाह्य रोगी सुविधाएँ उपलब्ध हैं। कुछ विशेष क्लिनिक जैसे नाक, कान, गला, शारीरिक स्वास्थ्य एवं पुनर्वास हफ्ते में दो बार चलाए जाते हैं। सप्ताह में एक बार मनोरोग विज्ञान और शिशु शल्य चिकित्सा के क्लिनिक चलाए जाते हैं। दोपहर में गर्भवती महिलाओं और असंक्रामक रोगों के क्लिनिक होते हैं। हर रोज लगभग 600 रोगियों को यहाँ देखा जाता है।

अन्तः रोगी सुविधा

इस अस्पताल में सम्पूर्ण सुविधाओं से सुसज्जित 60 बिस्तर वाला कक्ष है। यहाँ पर एक प्रसूति कक्ष और नवजात गहन चिकित्सा कक्ष की सुविधा भी उपलब्ध है। यहाँ पर आँख, स्त्री रोग, शिशु रोग और अन्य बिमारियों के इलाज के लिए पूर्ण रूप से सुसज्जित शल्य कक्ष है।

आपातकालीन सुविधा हरियाणा सरकार के चिकित्सों द्वारा उपलब्ध है। ये सभी मेडीकोलीगल केस भी देखते हैं।

नैदानिक सुविधा

यहाँ पर पूर्ण रूप से लैस प्रयोगशाला है जिसमें पूरी तरह से आटोमैटिक बायोकेमिस्ट्री ऐनलाइजर और हीमोऐनेलाइजर है। अधिकतर जाँच मुफ्त में होती है। कुछ खास जाँच तथा X-Ray के लिए नाममात्र की फीस ली जाती है। अल्ट्रासाउण्ड की सुविधा भी यहाँ उपलब्ध है। लेकिन यहाँ पर विकिरण विभाग से कोई वरिष्ठ रेजिडेंट नहीं है। अति गरीब रोगियों की फीस यहाँ पर वरिष्ठ आचार्य द्वारा माफ की जा सकती है।

टेलीमेडिसीन सुविधा

यह सुविधा जो बल्लबगढ़ को आ०भा०आ०स० से जोड़ती है अभी अपने शुरूआती स्तर पर है। इसे और बेहतर बनाने के लिए और नियमित करने के लिए प्रयास जारी है।

प्राथमिक स्वास्थ्य की सुविधा

इस परियोजना के दो प्राथमिक स्वास्थ्य केन्द्र हैं जो कि दयालपुर और छॉयसा जो बल्लबगढ़ अस्पताल से 10 और 20 कि०मी० की दूरी पर स्थित है। इन केन्द्रों में 28 गाँवों के लगभग 84,000 लोगों को स्वास्थ्य सुविधा उपलब्ध कराई जाती है। यह केन्द्र आ०भा०आ०स० के सामुदायिक चिकित्सा विभाग के वरिष्ठ रेजिडेंट, कनिष्ठ रेजिडेंट और इंटर्न्स की सहायता से चलाए जाते हैं।

यहाँ पर मूल रूप से रोग निदान की सुविधा मरीजों को मुफ्त दी जाती है इनमें से कुछ इस प्रकार हैं:

- रोजाना बाह्य रोगी सुविधा
- सप्ताह में एक बार जच्चा-बच्चा क्लिनिक

- जरूरी दवाईयां
- मूल जाँच (Hb, मलेरिया, मूत्र, बलगम)

कार्यक्षेत्र सुविधा

यह सुविधा 12 उप-स्वास्थ्य केन्द्रों द्वारा उपलब्ध करवाई जा रही है। यहाँ पर नियुक्त सभी पुरुष कार्यकर्ता आ०भा०आ०स० द्वारा एवं महिला कार्यकर्ता आ०भा०आ०स० अथवा हरियाणा सरकार द्वारा नियुक्त किए गए हैं।

सुविधाएँ

- गृह स्तर पर स्वास्थ्य की देखरेख की सुविधा
- हर 15 दिनों में महिला एवं पुरुष कार्यकर्ता द्वारा नियमित घरों का दौरा
- मातृ देखरेख
- परिवार कल्याण (गर्भनिरोधक दवाइयों आदि का विवरण)
- शिशु देखरेख (टीकाकरण, बाल रोग)
- संक्रामक रोगों की रोकथाम
- असंक्रामक रोगों की रोकथाम
- जन्म एवं मृत्यु रजिस्ट्रीकरण
- स्कूलों में चिकित्सा सुविधा

पिछले 10 वर्षों से टीकाकरण 95 प्रतिशत से ऊपर रहा है।

कम्प्यूटरीकृत मैनेजमेंट इन्फोर्मेशन सिस्टम :

इन गाँवों में रहने वाले सभी लोगों की कम्प्यूटरीकृत डेटाबेस द्वारा सूची कायम की जा रही है। इस परियोजना के कार्य क्षेत्र में हर व्यक्ति को एक पहचान न० दिया गया है जिसे यूनीक न० कहते हैं और सब लोगों की मुख्य स्वास्थ्य घटनाओं को रिकार्ड किया जाता है। सभी मृत्यु का कारण मौखिक निरीक्षण से पता लगाया जाता है और सबका रिकार्ड रखा जाता है। रिकार्ड को अपडेट करने के लिए हर वर्ष के प्रारंभ में वार्षिक जनगणना की जाती है। इसीलिए यह समुदाय सहगण अनुवर्तन (cohort follow up) के लिए आदर्श स्थान है।

शैक्षिक गतिविधियाँ

यहाँ पर विभिन्न विद्यार्थियों को विभिन्न अवधियों के लिए नियुक्त किया जाता है :

पूर्वस्नातक — 6 सप्ताह

स्नातकोत्तर — 15 महीने

इंटर्नशिप — 3 महीने (45 दिन बल्लबगढ़ अस्पताल 45 दिन प्राथमिक स्वास्थ्य केन्द्र)

नर्सिंग विद्यार्थी — 4-5 सप्ताह

सबसे बेहतर काम करने वाले इंटर्न को वी० रामालिंगास्वामी पुरस्कार से पुरस्कृत किया जाता है।

यहाँ पर 30 से अधिक ऐसे शोधकार्य हो चुके हैं जिनका निधि स्रोत बाहर से हुआ है। इन शोधकार्यों के सैकड़ों शोधपत्र प्रकाशित हुए हैं जिनमें कई तो अन्तराष्ट्रीय पत्रिकाओं में छप चुके हैं। यह शोधकार्य मुख्यतः मातृ एवं शिशु स्वास्थ्य, संक्रामक एवं असंक्रामक रोगों की रोकथाम, पोषण स्वास्थ्य में, या इन्फोमेशन टेक्नोलोजी में हुए हैं। यहाँ के समुदाय में शोध की क्षमता को देखकर आ०भा०अ०स० के कई विभाग हमारे साथ इन शोधों में सहयोग के इच्छुक हैं।

अन्य सुविधाएँ

- 1) **पुस्तकालय :** यहाँ पर विभिन्न विभागों की लगभग 700 किताबों का संग्रह है जिसमें कई किताबों के नवीन संस्करण उपलब्ध हैं। इसके अलावा पुस्तकालय में लगभग 14 पत्रिकाएँ नियमित रूप से आती हैं। पाठ्य कक्ष 24 घंटे खुला रहता है। यहाँ पर 24 घंटे प्राचार्यों, रेजिडेंट्स और विद्यार्थियों के लिए कम्प्यूटर और इन्टरनेट सुविधा उपलब्ध है।
- 2) **छात्रावास और रसोई :** सभी वर्ग के प्रशिक्षकों एवं आचार्यों के लिए रहने की सुविधा है। साल के शुरू के छः महीनों में विदेशी छात्रों को यहाँ आने के लिये प्रोत्साहन दिया जाता है। बाद के छः महीनों में आ०भा०अ०स० के पूर्वस्नातक छात्रों को छात्रावास उपलब्ध कराया जाता है। प्राथमिक स्वास्थ्य केन्द्र में भी आ०भा०अ०स० द्वारा छात्रावास और रसोई की सुविधा उपलब्ध कराई गई है।

Ballabgarh

I know that the title should have been something like “Some memories of the Comprehensive Rural Health Project” or “Random Memories of CRHSP” or even something catchy, as it has just been established that even scientific articles are more likely to be read if the title stimulates interest. The fact is that for me the whole Ballabgarh experience was so much more than merely a project, or merely a routine assignment, that when I think back or refer to it in conversation I refer to Ballabgarh. Ballabgarh was an experience that permeated my thought processes, made me what I am and shaped my thinking about Public Health.

If I have achieved some small measure of success and recognition as a Public Health specialist, Ballabgarh has had a major role. It is my years at Ballabgarh that taught me the broad dimensions of health care delivery. If I did not have my learning’s from Ballabgarh, I would have been at most a competent academic with abstract book knowledge.

It is difficult to put on paper what is so vivid in my mind. The foremost is the sheer joy and excitement of working with a team of superbly competent friends. I sometimes wonder if they also felt as I did but I remember the spirit in which we discussed new ideas, accepted them, disagreed and argued and ended up coming to a consensus, perhaps not even being able to put a finger on who originally mooted the concept. Finally it became ‘our’ idea, owned by everyone and accepted or discarded without thought to who originally put it forward. I think we enjoyed our work and enjoyed ourselves, at least I know that I did. Only once before I tried to explain what Ballabgarh meant to me. Dom Moraes the author visited us when he was writing a book ultimately titled “A matter of People”. I felt he got an inkling of the challenges and rewards we got.

Don’t get me wrong, it was hard work with long hours. We were young, we could work hard and did so. And at the same time we found the energy to play and enjoy ourselves, enjoy our company and laugh. The dedication and professional competence of Dr. Kapoor and the ever smiling face of Jenifer Lobo are indelibly etched in my mind and the minds of my family. In many ways Ballabgarh was our world and we were happy.

There were many frustrations and many challenges; trying to justify what we needed to the Institute when the reason and logic was so crystal clear to us. Thinking out of the box trying to find innovative ways of achieving what we felt had to be done when resources were limited. The difficulty of melding together the rigid “it has always been done this way” concept of our Haryana colleagues with ‘why not try it this way’; juggling to get what we wanted without demanding more than they were willing to give. The challenge of judging just how far we could go without overstepping the boundary of resilience in our partners.

One of the most important lessons that Ballabgarh helped me with was to clarify my thinking about Public Health and Clinical Medicine. I came to realize that though Public Health had its own body of knowledge and skills, in the final analysis it could not be a solution for the health care needs of any community and considered in isolation from medical care; the people need both and neither branch is complete without the presence of the other. For effective care of a community public health services are essential to keep them healthy; and a degree of clinical care is necessary when our interventions are inadequate and people fall sick. In the context of the people a community health service must keep them healthy and provide them essential first level medical care. Surely this defines the boundaries of Community Medicine. Call it by any name - Preventive & Social Medicine, Community Medicine, Community Health or the more correct Public Health, some element of clinical ability is an essential part of the team. It also became clear that Public Health could not be delivered by any one person. A team approach is essential for Public Health with members of the team being drawn from a variety of disciplines including social scientists, specialists in health education/health promotion, people with expertise in water and sanitation, other para-medicals and a physician trained in the skills of epidemiology, preventive medicine and the many other areas that make up the body of Public Health expertise.

Another important personal lesson was the importance of involving people in their own health care. If we had not done that we would not have achieved half of what we did. Many examples come to mind. When the local powers that be informed us that the contract was being terminated and the AIIMS team would have to move out we naturally informed the people of the area. The public outcry with 50 of the 52 panchayats in the area passing strong resolutions and demanding the continuance of the project forced the Chief Minister to rebuke the Health Minister and withdraw the decision to terminate the project, that too during a largely attended meeting in Ballabgarh. Dr. Karan Singh the Union Health Minister was also present. Other instances come to mind. The Fatehpur Billoch experiment in community involvement demonstrated the power of people's involvement in health. The Child Welfare Centre where farmers voluntarily brought a share of their harvest. When the hospital ran out of tetanus toxoid temporarily (owing to a well-meaning intervention by a visiting faculty member of pediatrics) village women went and bought toxoid in the open market and brought it to us for administration. I remember the group of village youth who went around their village collecting used engine oil from tractor owners at their own initiative dealt with mosquito breeding water collections once they had understood what lay behind the serious outbreak of malaria in their village.

The Ballabgarh Project has made some very significant contributions to both medical education and health care. No doubt they are spelled out in the book but from my perspective I would like to mention a few. The concept of community based undergraduate medical education and effective rural internship was developed and perfected at CRHSP. This pattern has served as a model for many others.

Another significant innovation that has made a national impact is the multi-purpose worker. We presented our findings to the Shrivastava Committee. Dr. Kapoor's landmark research on training health para-professionals provided a scientific validity to the concept.

Another innovation from Ballabgarh was the Computer based system developed to help paramedical staff provide health care more effectively. This programme has withstood the test of time and has been greatly evolved in recent years by the work of Dr. Anand. Computer based programmes for health are not new, however almost all of them focus on being management tools rather than an aid for health workers. The health worker was always at the centre of the Ballabgarh computer based programme for more efficient health care delivery. This one intervention saved the male and female health worker from filling 18 registers and made a significant amount of time available to health workers for community interactions and health promotion. Incidentally the person operating the system was originally the cook's assistant and the desktops did not need an air-conditioned palace or even a programmer.

There are many such examples. The truly remarkable reduction in community rates of low birth weight is perhaps unique in the country. Especially noteworthy is the fact this has been achieved not by some expensive or high-tech means but by community and targeted education for behaviour change. These relatively low-cost interventions have the additional advantage of being self-sustaining with only small periodic inputs.

There are many more innovations that come to mind. The community supported child welfare centre and the community based initiative to bring pregnant women to the hospital in case of need truly served felt needs of the community and the impact was reflected in the health status in the area. In fact the health statistics of the field area are so significantly better than the surrounding area that they are a testament to the efficacy of CRHSP's overall health management.

Other vivid memories crowd the mind as I write this, memories of a more personal nature. Dr. Kapoor's mother who was ever-ready to prepare the most delicious food for us. The pickles she made were a revelation — we depended on her for her extraordinary mango pickle of many years. She taught us to make the most delicious "paapar" from potatoes. We had plenty of them from our kitchen garden. Suresh himself was no mean cook. I remember being stranded without any servants by a total strike during a field visit. Suresh Kapoor took over the kitchen and produced delicious food from whatever he could scrounge. He also carried our fondness for thinking 'out of the box' to a new height by making Bloody Mary's from tomato sauce!! Delicious when you are stuck without food and rations for three days.

When I think of food and Ballabgarh how can we not remember the really excellent team of cooks we were blessed with. Everyone who was posted at Ballabgarh put on weight. I remember Pratap telling Bela Shah with great sorrow that she had spoiled his record – she was the only person who had not put on weight during her stay there!

One Haryana Health Minister visited our hospital incognito. She got tired of waiting in the long registration queue and a few times jumped to the window to say that she was in a hurry. The registration clerk finally asked her to await her turn in line if she wanted to see the doctor. He went on to suggest that if she had other intentions she should come in to his room from the back door. I don't think I will ever forget the expression on his face when he came to know who the visitor was.

I recall Sampath laughing and yet pleading to us not to make him laugh –he had a boil on his nose and it was very painful when he burst out laughing. Tilak Malik who had us spellbound with his rendition of Rabindra Sangeet, I still have recordings that I treasure. I am sure several of us will never forget an American exchange student who went to a concert by one of our most renowned instrumentalists. We got him a pass with great effort. He came back and told us how wonderful the music was when the sitarist finally played. He said that tuning the instrument took most of the concert time. The musician would try a few notes and the accompanist on drums would shake his head, then he would try again. All this took well over an hour then finally they were satisfied and both the musicians played a brilliant duet for about 20 minutes. We never had the heart to explain about the alaap to him. I remember the Director who would drop in incognito, spend the evening listening to the music in front of the fire, fall asleep there and go back to the Director's job early morning. We were one family – my wife occasionally baby-sat Pradeep Trehan's daughter at our home. I recall that the girl could not say stethoscope and said "tetocop" which became our name for her!

I could go on for many more pages but Pandav has reminded me that this is supposed to be a preface. But then whoever said that we followed conventional thinking at Ballabgarh.

Ballabgarh was wonderful, I was privileged.

Lalit M. Nath

Revisiting Ballabgarh

Memories and dreams are part of everyone's lives. Dreams are forgotten but memories remain. As has been said by someone "One of the reasons why people hold on to memories so tight is because memories are the only thing that don't change when everyone else does" (Anonymous).

My memories will bring to focus both the over all evolution of the Ballabgarh Project and also how the record keeping developed over the years. The Project development and activities can be divided in two phases:

Phase I : Rockefeller Foundation support phase

Phase II : AIIMS Phase

Phase I: The Rockefeller Foundation was the main sponsor for the development of Ballabgarh Project. In the year 1961 it initiated a small contribution at Ballabgarh PHC, the major resources being invested in Kurali, as the interns were posted there. The major activities were providing curative services at Kurali. All drugs were procured by the Foundation. State had no contributions. The first time I visited Kurali was in 1962 and stayed there for two days with students of 2nd batch who were the interns at that time. They used to run the dispensary. There were no major preventive activities carried out by interns or other staff. Tuberculosis patients were treated and domiciliary visits were made to give Streptomycin injections in their houses.

Dr. B.B. Dixit, Director of AIIMS, and Dr. Le Roy Allen, the representative of Rockefeller Foundation used to come to Kurali every Thursday evening and have dinner with interns.

My second visit and a longer stay was in 1965 when I joined there as an intern. This was the period when AIIMS, Rockefeller Foundation and Punjab government were planning the creation of Comprehensive Rural Health Services Project. The Ballabgarh Hospital Society had procured the land and handed over to State Government. They also collected money from various Panchayats and this was contributed for construction. At the same time AIIMS had created the department of Rural Medicine which was headed by Dr. J.R. Bhatia. In this year staff was being recruited. The recruited staff was supplementary to the staff provided by state Government. At this time there were staff members belonging to AIIMS, Rockefeller Foundation and Punjab Government. The categories of workers recruited were:

- | | | |
|-------------------------|---|------------------|
| 1) Basic Health Workers | - | Male workers |
| 2) ANMs | - | Female workers |
| 3) Field Supervisors | - | Male Supervisors |
| 4) Sanitary Inspectors | - | Male Inspectors |

- 1) Lady Health Visitors - Female Supervisors
- 2) Public Health Nurses
- 3) Public Health Engineer
- 4) Health Educator
- 5) Statisticians

The recording systems were developed and workers were trained. The records were:

- 1) Birth Card
- 2) Death Card
- 3) Family Demography Card
- 4) Personal Preventive Health Services Record
- 5) Maternal & Child Health Card (provided by State Govt.)

We as interns were allotted 15-20 families each for complete work up. But there was no field staff available to provide any help. The language was a big barrier.

I revisited Ballabgarh Project in 1967 as a Post-graduate from Deptt. of Paediatrics. By then the staff was in place. The PHC at Dayalpur had started functioning and Kurali too had been upgraded for the purpose of field work. Now both PHCs had Tutors from Preventive and Social Medicine and either a Senior Resident from Pediatrics or from Medicine. At Ballabgarh, a 48 bed hospital was in existence with residential Senior Residents from Surgery, Gynecology and Ophthalmology. There were three Faculty Members at Ballabgarh. The record keeping was done by health workers; however there was no systematic home visiting - lay reporting system was followed. Vertical National programmes were in existence. Except for Small Pox, no other immunization was being provided. The Small Pox vaccination was being done by Vaccinators & ANMs. I finished my work by December 1967 and joined back the department of Paediatrics. At this time there were 13 vehicles at Ballabgarh and hence movement was easier.

After graduating in Paediatrics, I applied for the post of Tutor at Ballabgarh. I was selected and posted to Dayalpur. Population of PHC was approx. 62,000. There were 7 Sub-centres. Small pox was a problem at that time. Male workers who were only collecting vital statistics were trained to give Small Pox vaccinations. We ensured near 100% vaccination. There were no Smallpox cases after 1972 in the project area. At Dayalpur the MCH clinic because very popular became immunization was started for DPT & Polio due to the kind courtesy of Deptt. of Pediatrics, AIIMS. As an ANM, a dai and LHV were residential at PHC campus they were encouraged to conduct deliveries at home. The interns got first hand experience of carrying out deliveries at domiciliary level.

I was promoted as a Lecturer in 1972. Dr. Nath joined as Associate Professor & Medical Officer In-Charge Ballabgarh. The working of workers was revisited. They were provided with a daily diary and were asked to make regular systematic home visits. The male workers were trained to prepare smears for Malaria parasite. They were also trained for giving intramuscular injections. There were approximately 17 registers which were to be maintained at Sub-Centres and there was lot of duplications of work. Faculty and Tutors decided to work on reducing this work load and total number of registers was limited to 6-7 registers. All these registers were printed and bound. Enough registers were printed so as to last for five years.

Then came the age of computerization. The manual records were put in Dbase database. This reduced the writing work of workers and removed duplications. The Sub-Centre clinics were made regular and it was ensured that vehicle will always be available for the afternoon clinic. Some times the problem arose when one of the vehicles went for repairs and others had gone to Delhi. There were five vehicles and four drivers. The residential posting of Post-graduates was started. It was initially for 4 weeks and later it was made for 1 ½ years. They were provided clinical training, seminars and opportunities to do their thesis work.

Under the ROME Scheme, undergraduate hostel was constructed and undergraduates were given a residential posting of five weeks in the 7th Semester. They are posted to CRHSP Ballabgarh between July and December. B.Sc. Nursing students were also given a residential posting. Initially it was for 3 months but now it has been shortened.

Over the years, there has been an all round progress. Number of beds has increased. With increasing population, staff has also increased. All clinical Senior Residents are now posted at Ballabgarh. Operation theaters and labour rooms have progressed. Laboratory and X-ray facilities have also become modernized. Now what needs to be done further will depend upon what Hotlz said “Ability is what you’re capable of doing. Motivation determines what you do. Attitude determines how you will do it.”

Ballabgarh will always be in my thoughts for:

- Regular interaction with staff
- Feeling young being surrounded by young people
- Regular get-togethers at various PHCs.
- Working of Faculty as a single unit.

S. K. Kapoor

“I Can Always Have My Children Later On ...!”

Iodine Deficiency Disorders (IDD) in animals is yet to receive the same attention as that of human beings. Possibly, this is fall out of the view that health of animals does not affect us directly. This view has changed over the years, and we now, especially in India, realize the important role the health of livestock plays on our health. Over 20 per cent of the income from the agricultural sector is created by livestock, over 70 per cent of rural households depend on animals either for a livelihood or for supplementing an income. If by reducing the incidence of IDD in animals, we can improve their health and increase productivity, we may in turn tip the scales in favour of better health and well being for human beings.

The extent of our dependence, often existence itself, on animals we underlined by an incident itself, on animals was underlined by an incident that took place years ago.

As a young medical intern from the All India Institute of Medical Sciences, New Delhi posted at the Comprehensive Rural Health Services Project, Ballabgarh (Haryana, India) an incident occurred that remains sharply etched in my memory – that of Hardevi, a mother whose three children were suffering from pneumonia. I was the only doctor on duty. I admitted all her three children to the hospital and requested her to stay back to care for them. In general, the hospital was always crowded and the sanctioned hospital staff could never cope with the ever increasing load of patient care. Therefore, we had to seek the help of the patient’s relatives and their assistance in taking care of the basic nursing needs. Hardevi said that she could not stay in the hospital as she had to return home 5 kilometers away, to take care of her buffalo, who incidentally was also sick. She could not risk her buffalo dying, for the lives her husband and his parents depended on the buffalo. We pleaded with her that her children would die if she took them away, but Hardevi stood firm. She took them back to her house.

One by one the three little children died. The buffalo survived. It was a harsh lesson in the health economics of survival, and the well being of a buffalo overriding the lives of one year old Satpal, three year old Hira and five year old Dayal. I still remember her words, “Doctor Saab, I am a mother. I will of course feel very sad if my children do not survive. But if my buffalo dies, the whole family will starve to death. I can always have children later on”.

Chandrakant S. Pandav

(Reproduced from the book “Iodine Deficiency Disorders in Livestock Ecology & Economics”

Authors: Dr. Chandrakant S. Pandav and Dr. A. R. Rao ; Oxford University Press 1997)

The Interest

On a windy and chilly December morning our jeep was heading towards a small village for my supervisory visit to the health centre there, attached to my primary health centre. The men and women were busy working in the wheat fields, which promised to give a good crop in a few months. Seeing me getting down from the jeep with my health supervisor, all the men abandoned their work and started running, giving us very suspicious looks. I was perplexed.

I asked my health worker, a local man, about this. With a sheepish smile, he explained, “Sir, seeing your jeep, they must have mistaken you for the bank employees. These villagers, most of them quite rich, took out loans from the government banks on various pretexts a few years ago. But nobody has bothered to return the money, though many of them could easily do so. The bank people have now threatened legal proceedings. So whenever they come to the village in their jeep to recover the loans, all the men run away to avoid them.”

I felt disgusted at this disclosure, brooding over the irresponsible behaviour of people.

Days passed by. One night I was woken up by loud knocks at the door of my residence in the primary health centre compound. A middle aged woman, shivering in the cold, pleaded with me to do something for the only child who had been writhing in pain for a few hours. Her son aged about 13 and with a malnourished frame, was groaning with pain in the “*buggi*” (ox driven cart) in which the woman had brought him from a village about 6 to 7 km away.

I brought the boy into the centre, and my examination strongly suggested acute appendicitis. I explained to the woman that the boy needed urgent surgical intervention in the district hospital, about 9 km away, as my centre was not equipped to deal with such patients. She looked gloomy. I could easily guess she was worried about the transport of her sick son. Our jeep was out of order. There was a driver with a three wheeler in the village who charged 30 rupees to go to the district hospital at night. I suggested this option to her. Her lips trembled and the sadness on her face became worse. Hesitatingly, she murmured, “I do not have a single paisa with me. Can you lend me 40 rupees? I shall return it in a few days.” I had no doubts about the genuineness in her request, so I handed over the money. The driver came and rushed the boy to the hospital.

I forgot about the whole incident. Then one Sunday morning in June, I was relaxing with a cup of tea. The wheat crop had been harvested and the fields in front of the centre looked barren. Suddenly a boy appeared at my gate. I thought hard, and remembered that he was the boy with appendicitis. I called him in and inquired how he was. Smilingly, he thanked me and said, “My mother was sorry that she could not come personally to thank you because of harvesting in the fields. But she has sent me with this money.” He handed a few currency notes to me.

It amounted to 50 rupees. I looked at him questioningly. He continued, "Sir, apart from your 40 rupees, which she had borrowed, this 10 rupee note is the interest on the delay in returning the loan."

In a flash, the scene on the wheat fields a few months ago appeared in front of my eyes. I was moved and could barely control my tears. I patted him over his shoulder and returned the "interest" to him.

Bir Singh

(Reproduced from British Medical Journal, Vol. 312, 24 February 1996, Pg 497)

1. Brief History of Ballabgarh and the CRHSP, Ballabgarh

1.1. History of Ballabgarh

The earliest account of Ballabgarh dates to 1710, when Gopal Singh, a Jat zamindar established this small princely state 20 miles south of Delhi. Ballabgarh, named after its most powerful ruler, King Balram (1739-53), has witnessed turbulent history over the years. It acted as a buffer zone between the mighty Mughals on one side and the wily Raja Surajmal of Bharatpur on other side. King Balram took on the mighty forces of the Mughals by ransacking the city of Sikandrabad, some 50 km from Delhi in 1750. He was supported by Jat rulers of Bharatpur (Balram was brother-in-law of legendary Raja Surajmal of Bharatpur). The Mughals sent a huge army, which defeated Balram and displayed his severed head on the Grand Trunk Road.

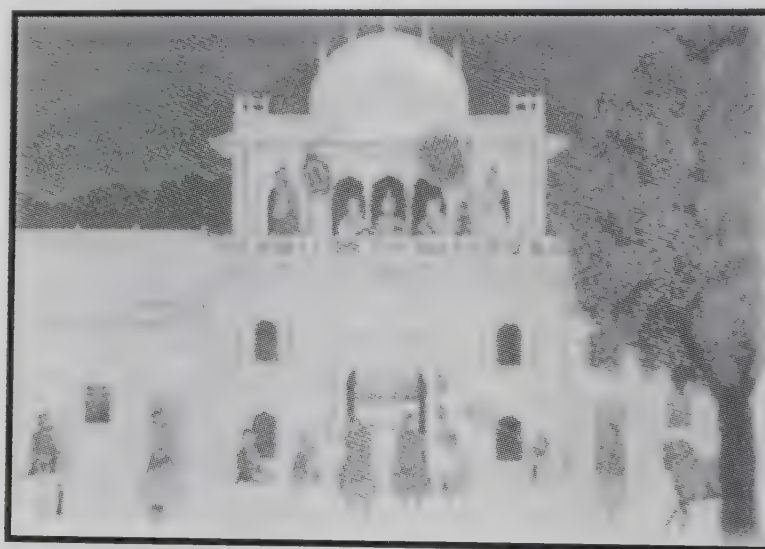


Figure 1.1. Artist impression of Raja Nahar Singh Palace

The most famous King of Ballabgarh and with whose name present day town is known across India was Raja Nahar Singh (1823 – 1858). The young Raja revolted against the Britishers and fought valiantly during the First war of Independence in 1857. He along with Nawab of Farrukhnagar, Raos of Rewari and Nawab of Jhajjar formed a formidable alliance against the British. Raja Nahar Singh was imprisoned in the Metcalfe House, Delhi and hanged for his role in the First war of Independence. Nahar Singh died a bachelor and with him the lineage of Rajas of Ballabgarh ended.

Modern Ballabgarh town and its adjoining villages are still dotted with a few architectural jewels from this bygone era. Adjacent to Ballabgarh Police station, one comes across a magnificent main gateway made of honey-colored stones and flanked by stone jharokas and gracefully fashioned stone pillars. Originally, there was a strong and massive fort enclosing the Raja's palaces (Figure 1.1.) a complex of mansions forming one loosely structured living unit.

What remains is a square, double-storied building made of albino sandstone. The two entrances have elaborately carved doorways. A pillared hall upstairs is strikingly similar to the royal apartments found in the Red Fort. The beautifully-wrought arches are separated by slender pillars, also of albino sandstone, ornamented with carved floral motifs. The walls have carvings of peacocks, doves, crested eagles and fruit bowls.



Figure 1.2. Raja Nahar Singh Palace, Ballabgarh

The Raja Nahar Singh fort is currently being run by Haryana Tourism as a hotel cum tourist attraction (Figure 1.2.). Similarly the “Rani ki Chattri” with its beautiful baoli (pond) and its exquisitely laid out canopies and terrace on first floor reminds one of the past glory. The Chandawali- Mujheri road is flanked on its left by an old abandoned building that used be the hunting outpost of the erstwhile Rajas.

Ballabgarh with its rich history has great potential to be developed as a tourist destination providing a glimpse into an era gone by.

1.2. Brief History of the Project

The involvement of the All India Institute of Medical Sciences, New Delhi in the rural area started in 1960, when the first batch of undergraduate medical students were nearing completion of their four and half years’ course of training. It became essential then for the Institute to find a suitable community where students could be exposed as part of their internship training, to reasonably well functioning rural health services. Primary Health Centre, Ballabgarh (Figure 1.3.), 34 km. from the AIIMS was found suitable along with its sub-centre Kurali located 12 km. from Ballabgarh. Kurali was the home village of Kunwar Gurdutt Singh, a state legislator of Punjab, who with this wife

Sharda Rani offered all assistance to the AIIMS and Rockefeller Foundation. A village 'chaupal' was made available for the male interns and a portion of their own house was given for the female interns and preceptorial staff. From the very beginning it was considered essential for the interns, registrars, tutors and other staff to actually live in the field areas as it was felt that provision of comprehensive medical care could never be restricted to mere office hours.

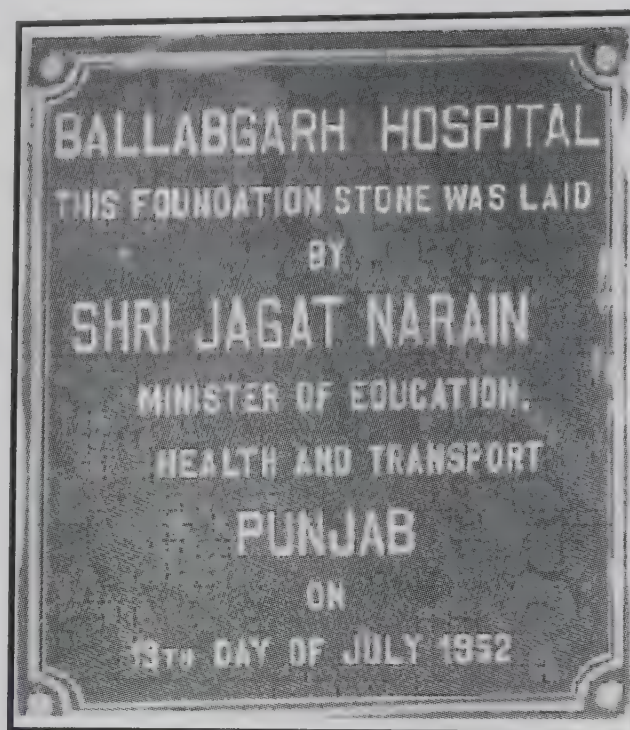


Figure 1.3 Foundation Stone, Civil Hospital, Ballabgarh

With help of the villagers, Kunwar Sahib, The Rockefeller Foundation and the enthusiastic and personal commitment of Dr. Le Roy Allen, Health centre Kurali - a building with 5 rooms – soon became functional. Later, four more rooms were added with the help of the Rockefeller foundation. The first batch of interns was posted in Kurali in 1961. The Programme functioned from Kurali, with the interns and registrars from Preventive & Social Medicine providing medical relief services at the health centre only. Very rapidly both the scope and demand for medical services expanded and the centre started drawing people from the adjacent villages. Within a short time, the centre was providing curative services - in the form of outpatient clinics, specialty clinics, emergency care and domiciliary midwifery services; preventive and promotive services in the form of antenatal, postnatal and baby care, school health, immunization, morbidity surveys and family health care.

All this generated a greater demand from the people not only of Kurali but also from the neighboring villages, for medical relief at Kurali health centre. It was also realized that attention to personal, preventive and public health services was only symbolic unless both the area of coverage as well as the staff were considerably augmented. The interns concentrating on medical relief services could not participate fully in a comprehensive community health programme in all its aspects. On the other hand, it was equally obvious that no preventive health services at the community level could be successful except in conjunction with curative care.

In consonance with the stated objective (section 14 F-V) that the Institute:

“... establish and maintain rural and urban health organisations which will form centres for the field training of the medical, dental and nursing students of the Institute as well as for research into community health problems”.

It was decided to set up a health care system providing the entire chain of services from the domiciliary in the community, via the intermediaries of the Primary Health Centre and Referral Hospital to the specialised and highly evolved services at the Institute, so serving the requirements of the community and establishing a referral link between the community and the Institute.

The need for coverage of a wider area, requiring more funds, materials and staff, pointed to the need for a joint project in which the service agency, the Ministry of Health of the then Punjab Government and the teaching institution, the AIIMS, could cooperate usefully. As there were no precedents which could be followed for such a collaborative programme, the project had to be conceived “de novo”.

The Rockefeller Foundation showed interest in such a plan. It was decided in 1964 in consultation with the Ministry of Health of the Union Government and the Punjab Government to take up the entire area of the Ballabgarh Community Development Block for an experiment in the organisation of comprehensive rural health services.

The official tripartite Memorandum of Understanding between the Punjab Government, the AIIMS and the Rockefeller Foundation was signed in 1965. The essential part of the agreement was a joint declaration of collaboration between the Punjab Government and the AIIMS. In essence the Government of Punjab was to provide the normal health resources in terms of manpower, material and drugs given to such an area and access to the existing health facilities at a nominal rental of Rupees one per annum. The AIIMS in return was to provide administrative inputs, health services at least at the level provided elsewhere in the state and to supplement the available services and resources as deemed necessary.

The Aims and Purposes of All India Institute of Medical Sciences in the Ballabgarh Project were:

1. *To evolve through practice and research a pattern of comprehensive health services which it is assumed will be desirable and reasonable for a community development block 10 to 15 years hence.*
2. *To develop an extra mural organisation capable of providing interns, postgraduate medical and other health services students practical experience in comprehensive rural medicine.*
3. *To provide for continuous evaluation of both the educational activities and health services as they are progressively evolved.*

Thus, the CRHSP at Ballabgarh was to help clarify concepts, evolve organisational techniques, improve training methods and provide a suitable field for much needed epidemiological and operational research. In short, as there did not exist anywhere in India a satisfactory example of comprehensive health services, the project was to provide a model for such services within the framework of the health services available in the country and develop models for the future. Thus, the mandate was clearly to lead and show the way for delivery of health care services – a mandate the current vision intends to do, keeping in mind the changing needs .

1.3. About Ballabgarh

Ballabgarh is located in Faridabad district of the state of Haryana in India and situated at 28° 25' 16" North Latitude and 77° 18' 28" East Longitude . It has with in the National Capital Territory . It is bounded by Union Territory of Delhi on its north, Gurgaon District on the west and State of Uttar Pradesh on its east & south. Delhi-Mathura National Highway No.2 (Shershah Suri Marg) passes through Ballabgarh. It has a railway station on the Delhi-Mathura double track broad-gauge line of the Northern Railway and North-Central Railway. The nearest domestic and international airport is Delhi, located at a distance of 52 kilometers. According to 2001 census, the population of Ballabgarh town was nearly 150,000.

2. Current Status of the CRHSP, Ballabgarh

2.1. Community based services

The Comprehensive Rural Health Services Project (CRHSP), comprises of one secondary level hospital at Ballabgarh called “Civil Hospital”, and two Primary Health Centres (PHCs) at Dayalpur and Chhainsa, situated 10 and 20 kilometers respectively from Ballabgarh. The area served by these two PHCs is also referred to as the Intensive Field Practice Area (IFPA).

2.2. Administrative Structure of CRHSP, Ballabgarh

CRHSP, Ballabgarh is run by the Centre for Community Medicine, AIIMS. The project entails maintenance and running of medical services, teaching and research activities at Civil Hospital, Ballabgarh and the two PHCs at Dayalpur and Chainsa. All the project activities are conducted under the supervision of the Professor-In-Charge with help from other faculty members from the department. The Head of the Department is the operational incharge and the Director, AIIMS is the overall incharge of the project.

Haryana Health Services department provides support to the medical services at civil hospital Ballabgarh in the form of medical officers and nursing staff with Senior Medical Officer as their administrative chief, the overall incharge being the Chief Medical Officer of Faridabad district.

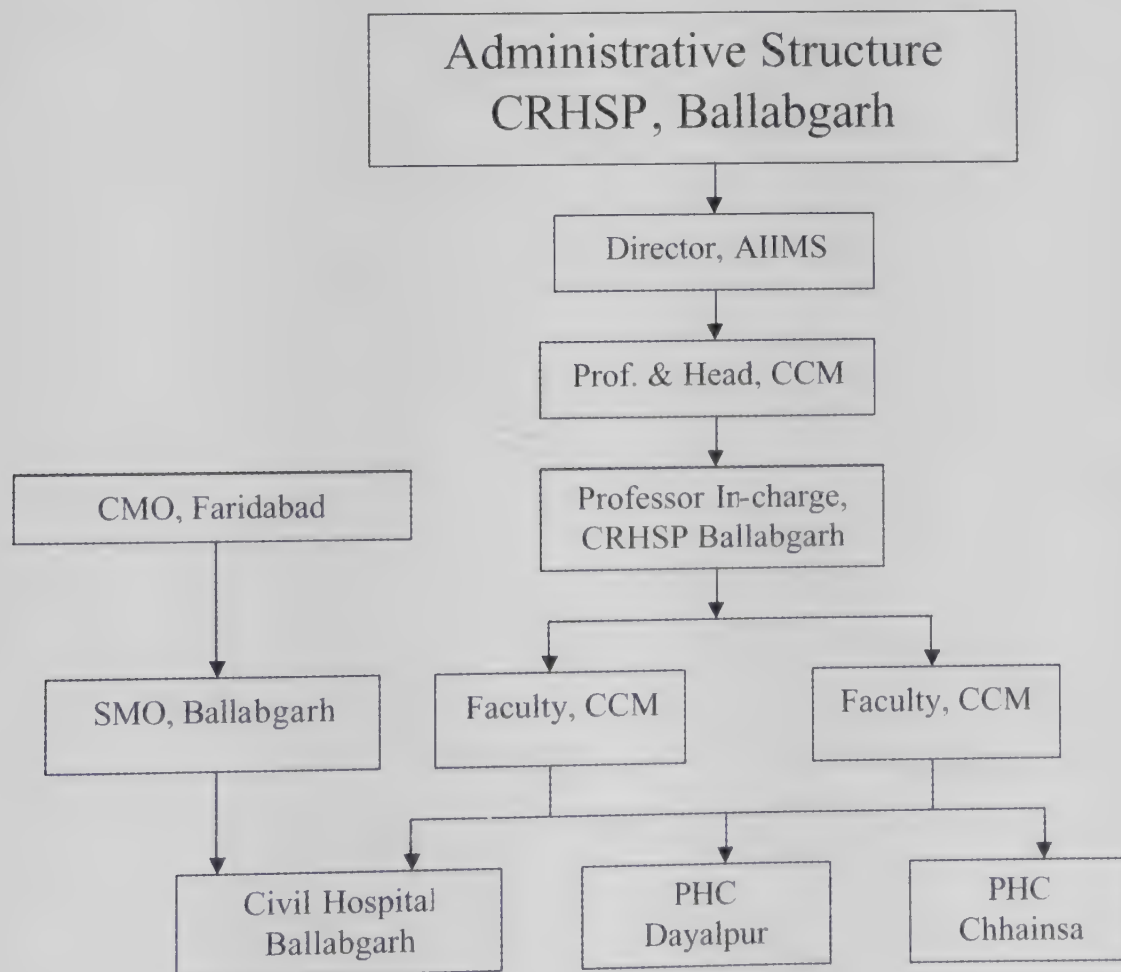


Figure 2.1. The administrative structure of CRHSP, Ballabgarh

2.3 Ballabgarh Civil Hospital

CRHSP Civil Hospital, Ballabgarh is a secondary care level hospital. This hospital not only serves our field practice area but large population from adjoining areas.

The facilities offered by this hospital can be divided into following categories –

OPD (Outdoor Patients Department) Services:

- Daily Basic Specialties OPD services,
- Bi-Weekly and weekly Specialty OPD services
- Immunization services
- Family Welfare Services including Ante Natal Clinics
- Special Clinic for Non Communicable Diseases

Casualty Services:

- 24 hours a day, 10 beds

Indoor Services:

- 50 bedded ward
- Well Equipped Labor Room
- Neonatal Unit

Support Services

- Laboratory services
- X-Ray and Ultra sound Services
- Operation theatre
- Pharmacy services
- Ambulance services
- Engineering Services

Teaching and Training Services

Library and internet facilities 24 hours a day

2.3.1. OPD Services

The hospital remains open from Monday to Friday 8.30 am. to 4.30 pm. and on Saturday 8.30 am. to 1.00 pm. On an average, 500-600 patients are seen per day. Last year (2006-2007) a total of 64,837 new patients got registered in OPD.

Basic specialty OPD services are run on a daily basis. While other, biweekly or weekly services are mentioned below:

i) Daily services (Registration time: 9am-11am):

- Medicine
- Pediatrics
- Gynecology and Obstetrics
- Surgery
- Dental

ii) Biweekly services:

- Physical Medicine and Rehabilitation (Monday, Thursday)
- Ear, Nose and Throat (ENT) (Wednesday, Saturday)
- Ophthalmology

iii) Weekly

- Psychiatry (Wednesday)
- Pediatric surgery (Wednesday)

iv) Immunization Services:

- Hospital provides following vaccines free of cost to all children:
BCG, DPT, OPV, Measles, DT, TT and Hepatitis B.

v) Family Welfare Services:

- All the family welfare services including contraceptive services, MTP services and counseling are available free of cost. Infertility related investigations and treatment are also provided on case-to-case basis.

vi) Special Clinics:

- **Ante Natal Clinic:** Monday, Wednesday and Friday (2pm-4pm). The popularity of the clinic is evident from the fact that about 5,000 pregnant women register in this clinic every year.
- **Non Communicable Diseases:** Thursday (2pm-4pm). Primarily catering to patients with Diabetes, Hypertension and Chronic Heart Disease (CHD). The hospital provides investigation and treatment facilities along with health education.

2.3.2. Casualty Services – 24 hours a day

Hospital has well-equipped casualty services with emergency ward of 10 beds. It provides services 24 hours a day. All type of patients including those require medical, surgical, and gynecological interventions and road traffic casualties come here. Total number of patients attended last year (2006-2007) was 14,218.

2.3.3. Indoor Services

Hospital has a 50-bedded ward for patients requiring hospital care. Doctor on ward duty, nursing staff and other auxiliary staff remains available inside ward for 24 hours. Specialist doctor staying in campus remains on call. It is equipped with oxygen supply and all other necessary equipment. Transfusion Services are available round the clock. While, there is no blood bank facility in the hospital, a blood storage facility exists which stores about eight to ten units of blood of different blood groups (depending on availability) and is used for both elective and emergency procedures. It is replaced on as and when needed basis.

Well-Equipped Labor room and Neonatal Unit: Well equipped modern Labor room is providing services 24 hours. A Neonatal unit for sick newborns is also available. DM students in Neonatology, from the Department of Pediatrics at AIIMS are posted here on rotational basis. However, they are not available round the year.

2.3.4. Support Services

- i) Laboratory Services:** Hospital runs normal laboratory services as per hospital hours, while urgent and emergency investigations are available round the clock. Laboratory is equipped with auto analyzers for blood biochemistry, hematology and cytology, besides microscopy facility. The hospital is in process of establishing a microbiology laboratory. All the facilities are either free or charged a very nominal rate.
- ii) X-ray services and ultrasound services:** Are available during normal hospital hours at very nominal rate. These services remain available for urgent and emergency cases on a 24 hour basis.
- iii) Operation Theatre (O.T):** Operation theatre complex has one minor operation theater and two major operation theatres. The O.T are state of art modern and equipped with latest technology including ventilators, anesthesia services for general, spinal and local anesthesia. All major surgeries are conducted here including cholecystectomy, total abdominal hysterectomy, pan-hysterectomy, vaginal hysterectomy, lower section cesarean section (LSCS), hernia repair and pediatric surgeries. The operation theatre has laparoscope for laparoscopic surgeries and an operating microscope for ophthalmic surgeries, using which cataract surgery with intra ocular lens (IOL) implant and other ocular surgeries can be performed. In a year around 2000 surgeries are carried out.

iv) Pharmacy services: Medicines are available round the clock to the patients admitted in ward and casualty. During normal hours for OPD services (Monday to Friday 8.30 am. to 4.30 pm. and on Saturday 8.30 am. to 1 pm.) most of the essential drugs are available and are provided free of cost to all the patients. For poor patients, other drugs are also arranged free of cost. It is our endeavor that poor should not die in the hospital just because they cannot afford to purchase life saving drugs.

v) Ambulance services: Ambulance services are available round the clock. These are provided with help of Red Cross at a nominal cost. In case a patient's condition warrants referral to a tertiary care center, the patient is transferred to the main hospital AIIMS, New Delhi which is a tertiary care hospital.

2.3.5. Teaching and Training Services

Hospital of CRHSP is a teaching hospital. Training programs for medical and nursing students and both graduate M.B.B.S and post graduate M.D programmes are conducted. Medical trainees also complete their internship under supervision in this hospital. Class rooms and seminar rooms are equipped with fully functional computer and multimedia aides. All trainee doctors reside in the hostel inside the CRHSP hospital campus. Mess and recreational services are provided by AIIMS. Faculty members from the department also stay in campus while faculty from other disciplines visit CRHSP from AIIMS on prefixed days.

2.3.6. Library

A branch library is located on the campus at Ballabgarh, while the main library is at AIIMS, Delhi. This branch library has many medical books with recent editions for quick reference. It also subscribes to various national and international medical sciences journals of repute. The library has computer facilities and can be used for searching various medicine databases including Medline, Cochrane, Popline etc. The library is open around the clock (24 Hours, Seven days a week)

2.3.7. Financial arrangement

As per agreement with the Government of Haryana, resources (human, supplies etc.) are provided as to any such similar health facility under them. AIIMS provides the rest of the funds for running the hospital. AIIMS funds all the academic activities as well.

2.4. Intensive Field Practice Area (IFPA), CRHSP, Ballabgarh

As mentioned earlier, the area under the two PHCs at Dayalpur and Chainsa is also termed the Intensive Field Practice Area (IFPA) of the project. This comprises of 28 villages catering to a population of over 84,748 as on 31st December 2006. The health care in these villages is provided along the national pattern.

Key features of the IFPA at a glance

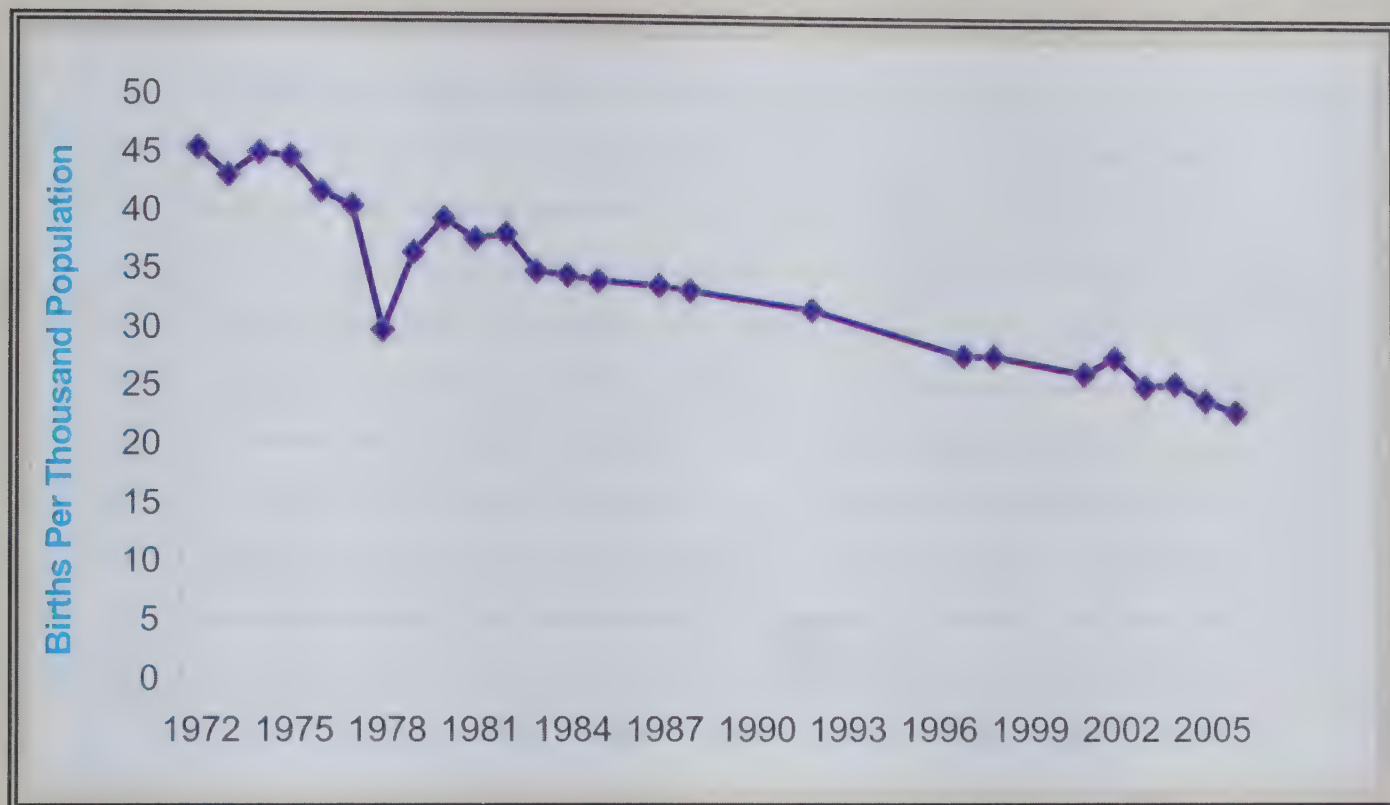
- ⊕ Total Population Size: 84,748 as on 31-12- 2006
- ⊕ Population Density: 1620 persons / square km
- ⊕ Seasonality: 4 seasons (winter, autumn, summer and rainy season)
- ⊕ Main economic activity: Agriculture
- ⊕ Level of education - 70.2 % population above 6 years of age are literate
- ⊕ Religion – Majority Hindu (90.5 %), Muslims (9.4%.)
- ⊕ House characteristics - Almost all are pucca houses
- ⊕ Access to water - 80.6 % within house or nearby.
- ⊕ Sanitation and electricity - 100 % electrification and 38% sanitary latrines
- ⊕ Mean Age at Marriage (Boys) 22.4 years
- ⊕ Mean Age at Marriage (Girls) 19.8 years
- ⊕ Mean Age of mother at birth of first child 20.98 years
- ⊕ Mean spacing between 1st and 2nd child 2.54 years

The figures and tables in the following pages present some more data on the Intensive Field Practice Area population:

1. Crude Birth Rate (1972-2006)
2. Crude Death Rate (1972-2006)
3. Infant Mortality rate (1972-2006)
4. Neonatal Mortality Rate (1972-2006)
5. Couple Protection Rate (1991-2006)
6. Immunization coverage for 12-23 months age group (1986 -2006)

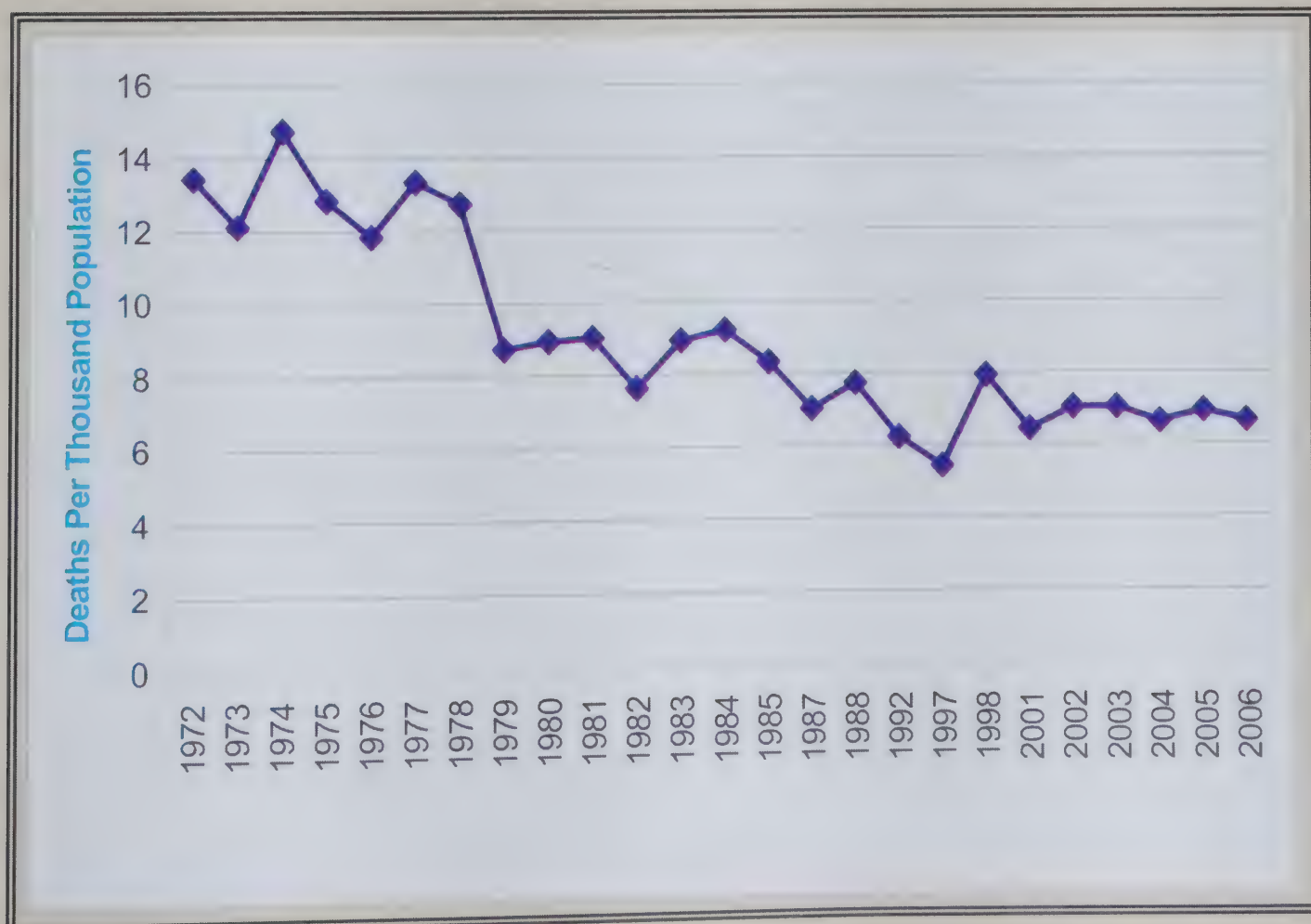
1. Crude Birth Rate (1972-2006)

Defined as the number of live births per 1000 estimated mid -year population in one year



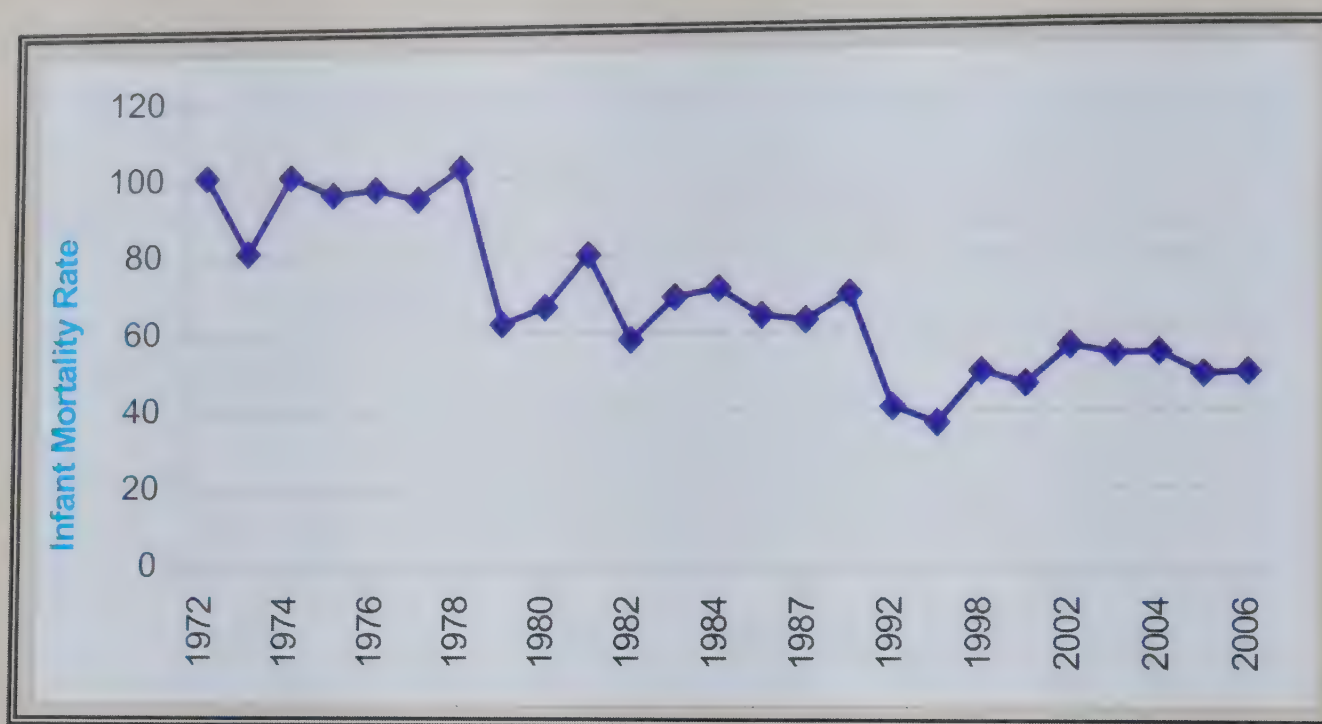
2. Crude Death Rate (1972-2006)

Defined as the number of deaths per 1000 estimated mid -year population in one year



3. Infant Mortality Rate (IMR) - (1972-2006)

Defined as the ratio of number of deaths of children less than 1 year of age in a year to the total number of live births in the same year



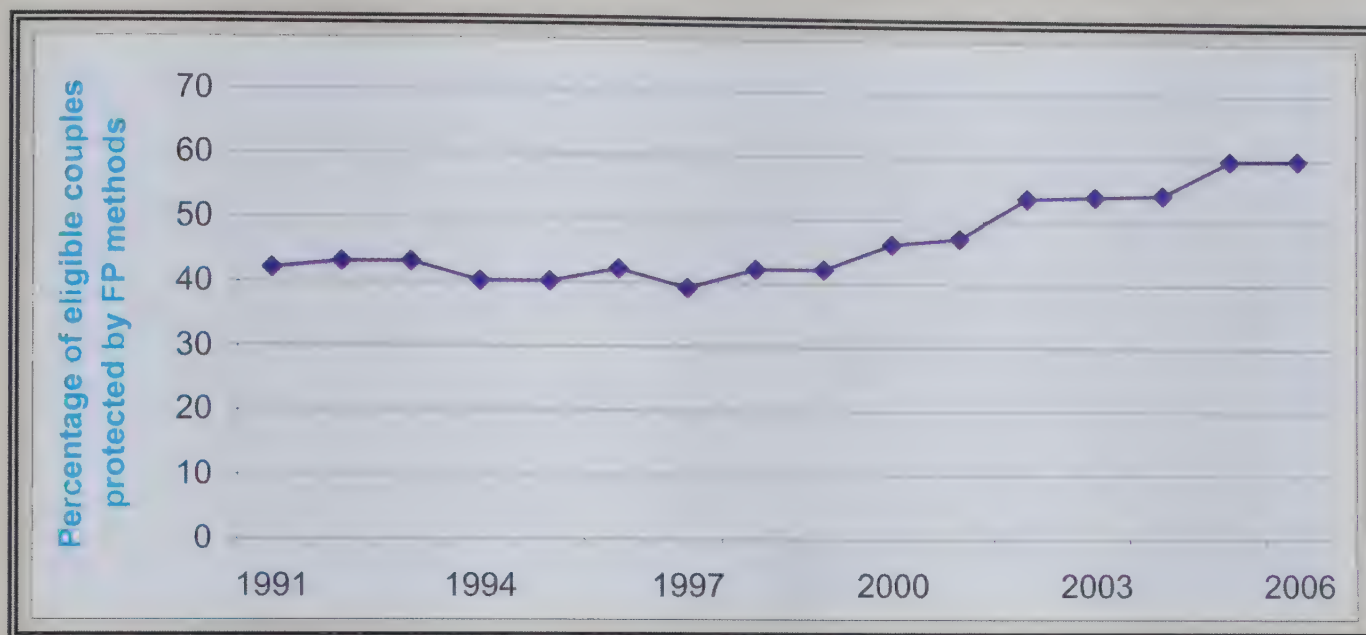
4. Neonatal Mortality Rate (NNMR) – (1972-2006)

Defined as the ratio of number of deaths of children less than 28 days of age in a year to the total number of live births in the same year

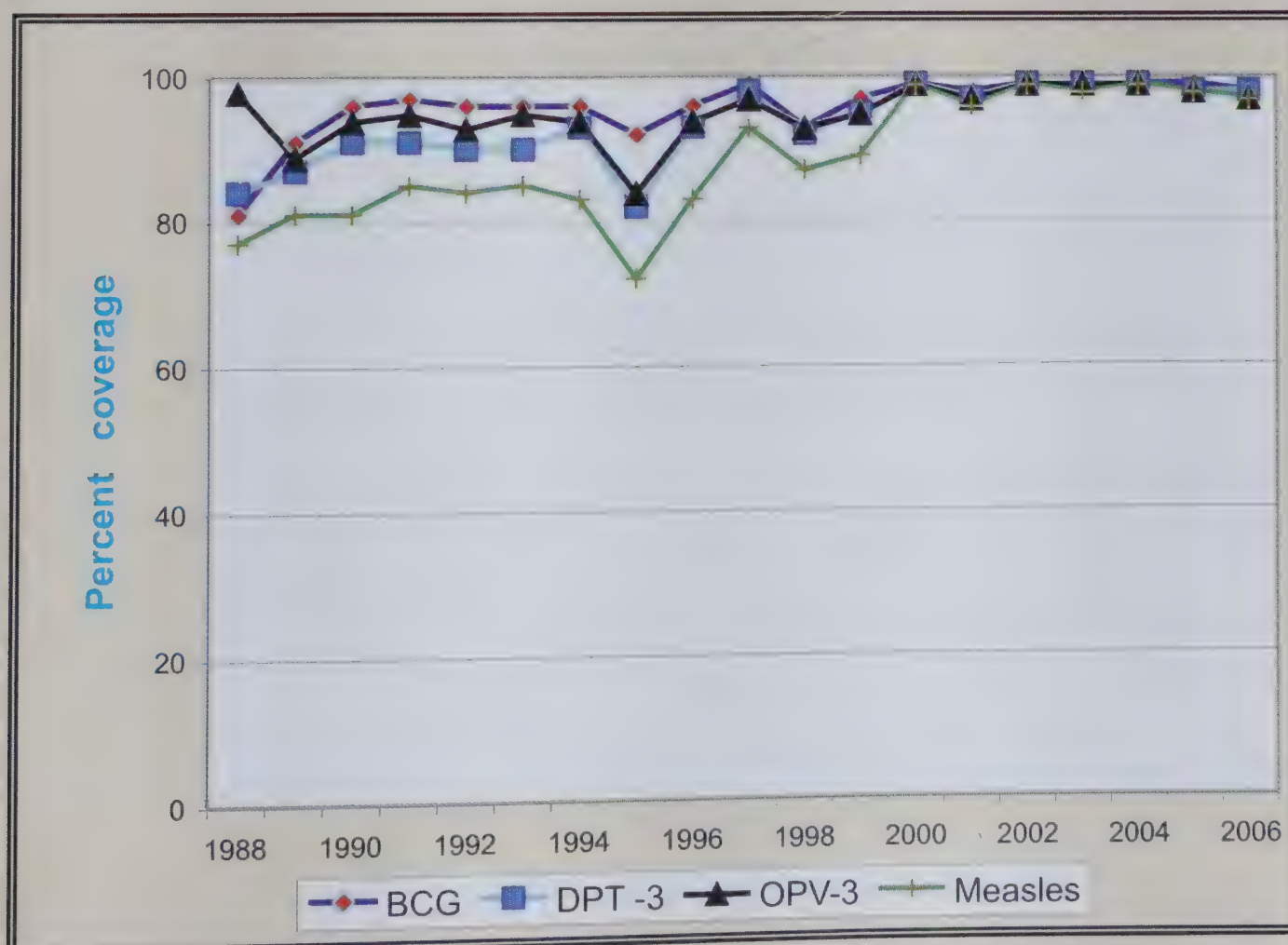


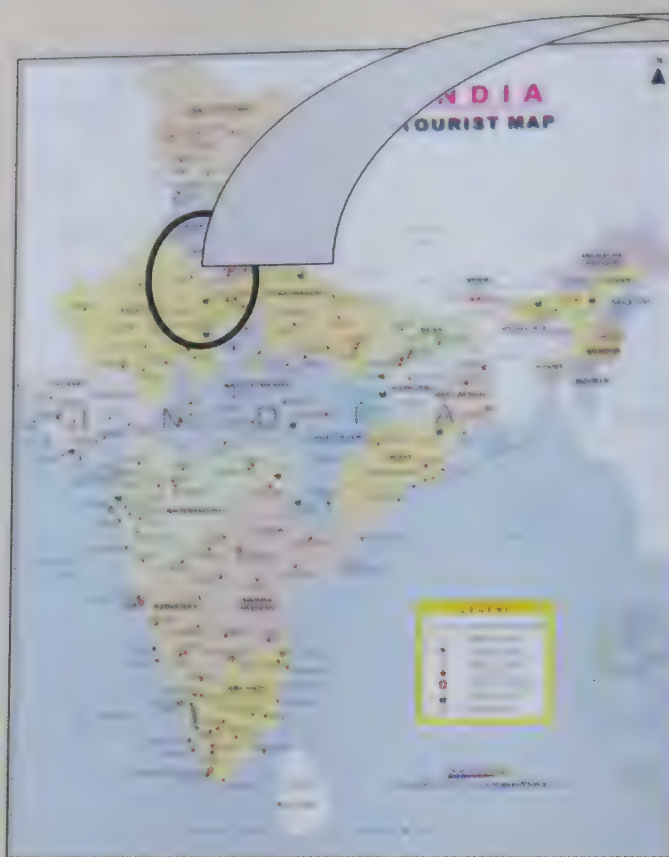
5. Couple Protection Rate (1991-2006)

Defined as the percent of eligible couples effectively protected against child birth by one or the other approved methods of family planning

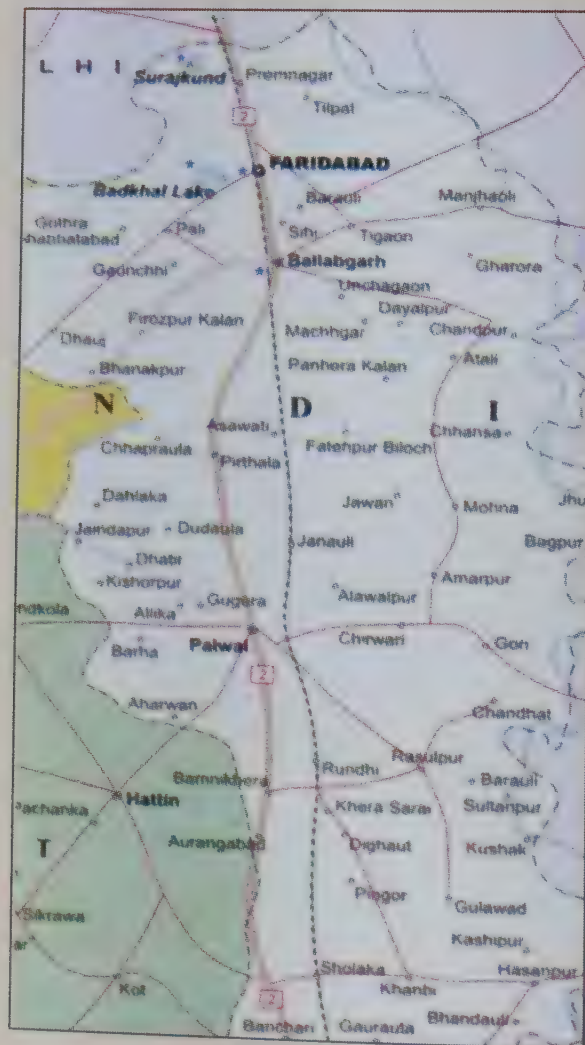
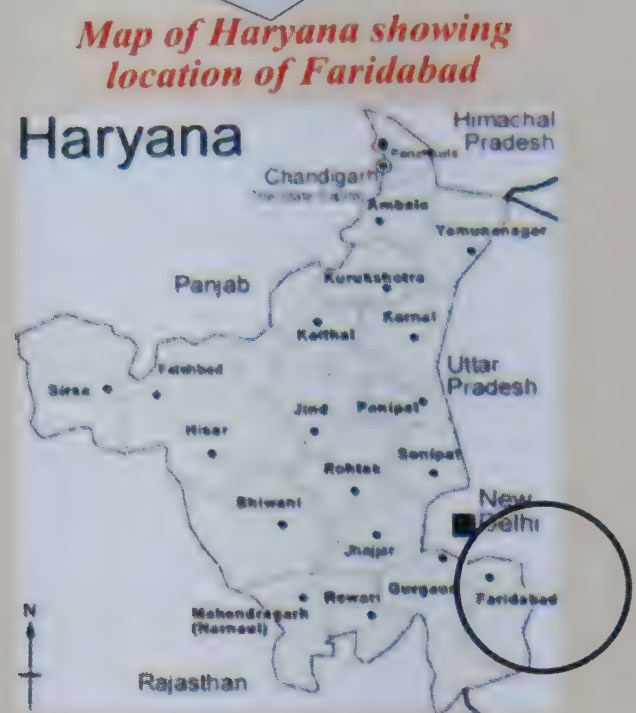


6. Immunization Coverage in 12-23 months age group (1988 – 2006)





Map of India showing location of Haryana



Map of Faridabad district



Civil Hospital Ballabgarh

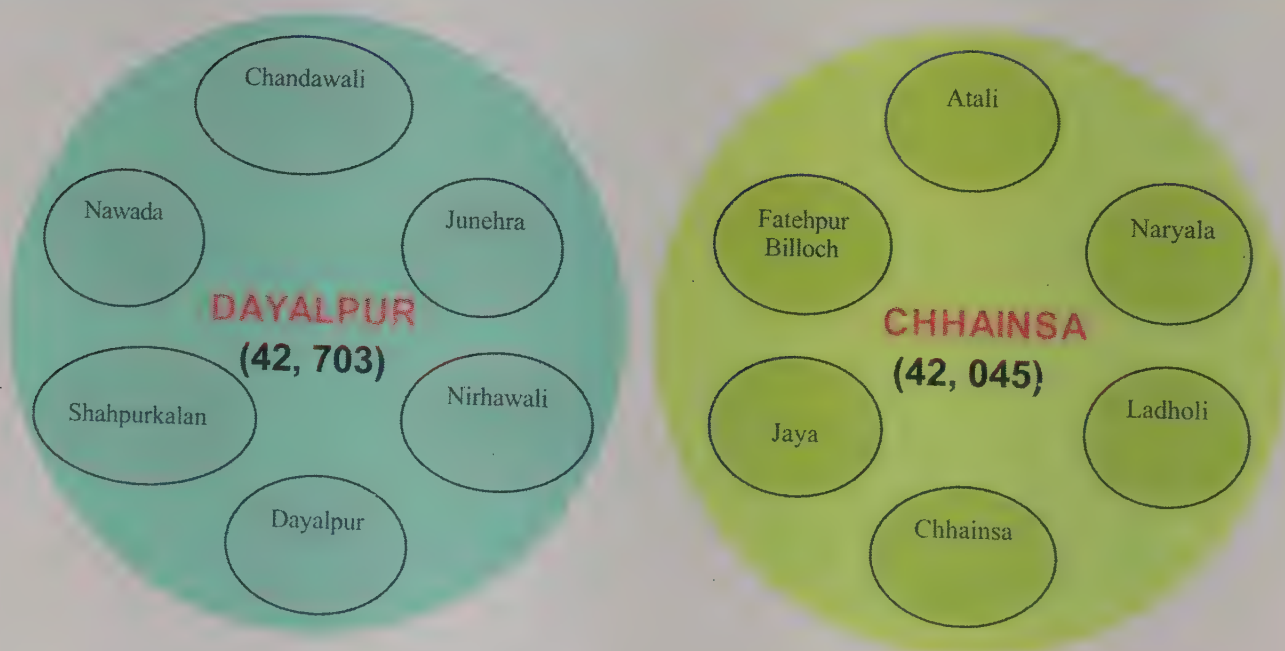


PHC at Dayalpur



PHC at Chainsa

Rural Intensive Field Practice Area, CRHSP
Population Served – 84,748



Rural Field practice area showing the two PHCs and their subcentres



Dental OPD at Ballabgarh Hospital



Labor room at Ballabgarh Hospital



Neonatal unit at Ballabgarh Hospital



Inpatient ward at Ballabgarh Hospital



Ophthalmology OPD at Ballabgarh Hospital



Operation Theatre at Ballabgarh Hospital



Library at CRHSP Ballabgarh



X-Ray room at Ballabgarh Hospital



Laboratory at Ballabgarh Hospital



Community meeting at PHC Dayalpur



Pediatrics OPD at Ballabgarh Hospital



Health talk at a subcentre

3. Surveillance Activities in CRHSP, Ballabgarh

3.1. Demographic Surveillance

Ballabgarh Demographic Surveillance site is a member of the International Network of field sites with continuous Demographic Evaluation of Populations and Their Health in developing countries (INDEPTH). The project has maintained continuous demographic surveillance for the last forty years.

Demographic surveillance is carried out as a routine activity by the health workers. The male workers are given the responsibility of registration of vital events, whereas the female workers register the women in the antenatal period and follow them up till delivery. Births are registered by the male workers during their domiciliary visit. Every month, the data in Management Information System (MIS) is updated by the workers.

Apart from the routine continuous collection of demographic information, a yearly census is also conducted in the month of December by the male workers. This takes care of any event (birth, death, migration etc) that was missed by the worker during the monthly visits. Information in about 20% of the households is crosschecked by the Health Assistant and in another 5% of the households by the Medical Officer-in-Charge for completeness and accuracy. Only after the cross-checking is complete, the data entry is carried out.

3.2. Verbal autopsy

The cause of death in under-five children is verified by verbal autopsy. A verbal autopsy tool was developed and validated in CRHSP. The verbal autopsy is separate for 0-28 days, and 29 days to 5 years and above five years of age. The health workers fill up the verbal autopsy forms and the cause of death is verified by the medical officer. These forms are filled by the health workers during their routine visits. These forms are reviewed by the Medical Officer-in-Charge of the PHC to arrive at a cause of death and are sent to Ballabgarh. These are reviewed by the faculty member at headquarter and then entered into MIS and stored for future purposes.

3.3. Behavioral surveillance

The Infant Mortality Rate (IMR) of the field practice area was 80 per 1000 live births in 1981, and gradually came down to 36.8 in 1997. However, the IMR increased to 49.7 in 1998, and since then, it has remained stagnant between 45 and 50, and no further reduction could be achieved. It seems that CRHSP has reached the limit of achievements through health system intervention. It is hypothesized that introducing behavioral change may help in bringing down the mortality rates further. In order to plan appropriate intervention and monitor the change, it was

decided to introduce the Surveillance for Demographic, Environment and Health Information (SUDEHI). This was done for the first time in 2001-02. It is to be repeated in 2008. The aim of SUDEHI was to collect information on human behavior which predisposes the population to common communicable diseases and Non Communicable Diseases and to ascertain the health care seeking behavior.

3.3.1. Development of instrument

The development of the instrument i.e., the interview schedule was done in various stages. Initially, the various domains were listed and reclassified into 3 broad sections: Maternal & Child Health, Household level information and Individual level information. These cover behaviors related to all major parameters for health from sanitation, to lifestyle and health seeking behaviors. However, no questions on knowledge and attitude were included. Questions were designed for each domain (Refer to Table 3.1. below). The main criteria for inclusion of questions were: they should focus on modifiable risk factors, should be measurable, and are not already available in the existing Health Management Information System (HMIS). The questions thus framed in English, were translated in the local language, back translated independently in English, pre-tested and finalized. Wherever possible, available tools were adapted and used e.g. WHO STEPs for NCDRF (Non Communicable Diseases Risk Factors).

3.3.2. Sample size

Sample size for the Maternal and Child Health (MCH) section was decided to be about 1900, which is generally the total number of births annually in the project area. For household section, all the houses were included. However, the sample size for the individual section was calculated based on certain variables. Literature search was done to find out the prevalence in the studies conducted earlier from this project area, or by referring to Indian studies and data given in the National Family Health Survey for rural population. The prevalence ranged from 10 % to 75 %. Depending on the type of behavior and the time taken for a significant detectable change to occur, to detect a change of 5 % (absolute precision) by the next survey, the sample size calculated ranged from 686 to 1566. Hence, it was decided that a sample size of 1500 would be adequate for men and women separately.

3.3.3. Collection of data

(Refer to table 3.2. below) The Maternal and Child Health questionnaire was administered to all the women who were pregnant during the period 1st April 2002- 31st March 03. It was decided that all the questions about pregnancy would be restricted to the last pregnancy to minimize recall bias. The respondent would be the concerned woman. The Individual questionnaire was administered to all individuals aged 15 years and above. The respondents were selected by simple random sampling from the computerized database. These were stratified for each subcentre to include 150 males and 150 females. The Household questions were asked from the women of all the households. If there was more than one woman in the house, the senior-most one who looks after the family kitchen was interviewed. After the pre-testing, the health workers were trained to use the

Interview Schedule. A manual was prepared for using this Interview Schedule to ensure ease and standardization of data collection. The manual provided detailed instructions for asking each question. This manual was translated into the local language. The training was carried out in one day. The health workers field-tested the interview schedule in the community before starting with the actual data collection.

Since the whole population was covered during the annual census carried out by the male workers, and the study required collection of information from all households for SUDEHI, it was decided to combine this surveillance along with the annual census. Thus, the male worker filled the individual male forms and all household forms along with census. The female workers collected information on females and maternal and child health questionnaire. The data collection started on 15th December 2003 and was completed by 15th February 2004. Due to SUDEHI, the process of conducting the census took fifteen additional days.

Information on birth, death, and reproductive health issues is being routinely collected as a part of the national program. All participants were explained the purpose of the questions and verbal consent taken. In the individual section, the information from each individual was kept anonymous by removing the unique number during data entry. This ensured confidentiality and the dataset was not linked with the MIS.

Concurrent supervision was carried out by the supervisors and medical officers. Simultaneously, there was an independent data collection of 20% of sample by supervisors and 5% by the medical officers in all the three sections. A discrepancy of 10% in any village/subcentre resulted in the data collection being repeated. However, on verification, no major discrepancies were detected.

3.3.4. Results

(Refer to table 3.3. below) As mentioned earlier data was collected for three sections namely maternal and child health, individual and household sections. A total number of 1625 women were interviewed for the Maternal and Child Health section. The total numbers of forms filled up in the Individual section were 1431 for males and 1434 for females. Out of the 8145 households in the project area, data for the household section could be collected from 7488 households (91.9%). It was seen that 95% owned a house; about 80% of households have access to drinking water and 38% to sanitary latrines. Only 3% of households used unsaturated oil for cooking. In the MCH section, it was seen that only 28% of women increased their dietary intake during pregnancy; 45% of women took iron and folic acid tablets during their last pregnancy. Initiation of breast feeding after 4 hours was reported in 49% of women, and about 74% of infants received prelacteal feeds. In the individual section, it was seen that about half of adult males reported using tobacco. The average consumption of fruits in both males and females was about 2 days per week.

The results obtained by this survey were compared with the results of an NCDRF survey using WHO STEPS

approach which was carried out in rural Ballabgarh during 2003-04 (includes some rural areas outside the study area as well), which was done in a research mode (Refer to table 3.4. below). There is no statistically significant difference in the estimates. Thus, it may be reasonable to state that the survey using the health workers has generated valid results. No other source of parallel information could be obtained to validate MCH or Household information. However, it is safe to assume that there is no reason to suspect that it might not be so, given the fact that other information collected during the same process was found to be valid.

While all the three questionnaires were administered together during the first round, it is obvious that this need not be so every time. The frequency with which these sections need to be administered depends upon the expectation of change and load that the system can handle at a given time. Some of the indicators like the NCD related behaviors need not be collected on an annual basis as these behaviors are not expected to change rapidly and may be collected at intervals of three to five years. Therefore, the frequency of data collection can be planned in such a way so that it does not overburden the system and at the same time should be able to capture the changes. Information on Maternal and Child Health can be collected more frequently i.e. annually or biannually.

Table 3.1. Various components and key variables of SUDEHI

Module	Component	Domains identified	Items included	Key variable (s)	Sample size estimated
Maternal & Child Health (MCH)	Antenatal	Antenatal care, intranatal care	Abdominal examination, Blood pressure, intake of folifer	90 days intake of iron & folic acid (folifer) during pregnancy	1566
	Child health	Newborn care, child nutrition, childhood illnesses	Age at weaning, use of feeding bottles, measurement of the Mid-Arm Circumference (MAC).	Breast feeding initiation within 1 hour reported as 10%	686
	Reproductive health	Reproductive tract infection, family planning	Menstrual hygiene, contraceptive use	Use of family planning methods	1471
	Health care seeking for childhood illness	Childhood illnesses	Treatment sought first in case of illness in the last 3 months.	Preferred health facility for treatment	Not applicable
	Non Communicable Diseases	Risk factors for NCDs	Tobacco and alcohol use, Consumption of fat / junk food, Leisure time physical activity	Use of tobacco, alcohol, diet	1252
Individual Behaviour	Hygiene & sanitation	Personal hygiene	Hand washing practice, brushing the teeth, use of footwear, use of sanitary latrines,	Hand washing practices	- No information available
	Personal protection	Road accidents/ malaria/ HIV	Use of helmets, Use of mosquito repellants, condoms,	sexual activity with non regular partner and use of condoms	No information available
	Socio-economic status	Household possessions & facilities	Items included under Standard of Living Index (SLI)	Socio economic status	Sample size was pre decided to include all households
Household	Others	HH features	Types of salt, oil, availability of safe drinking water etc	Oil, salt intake	

Table 3.2. Methodological details of SUDEHI survey

Module	Interviewer	Subjects	Respondent	Reference Period	Numbers interviewed	Response rate
Mother and Child	Female worker	Mother-newborn pair	Mother	Pregnancy registered in April 2002 – March 2003	1625	85 % (1625/1900)
Individual	Both as per sex	Individual above 15 years	Self	Jan – Dec 2003*	1431 (males) 1435 (females)	95 % (2866/3000)
Household	Male worker	All Households	Lady of the house	Jan- Dec 2003	8145 households	91% (7488/8145)

*However, the recall period could be different for different questions.

Table 3.3. Results of Selected indicators from SUDEHI

Domain	Indicators	Estimate (%) (95% CI)
MCH section	Took Iron & Folic acid during pregnancy	45 (42 - 48)
	Infants given pre-lacteal feed	74 (71.6 – 76.4)
	Breast feeding initiated after 4 hours	49 (45.9 – 52.1)
	Children who were bottle fed	27 (23.9 - 30.1)
	Weaning at 6 months	72 (69.5 – 74.5)
Household section	Access to water within and near the house	80.6 (80.2 – 81)
	No sanitary latrines	62.1 (61.5 – 62.7)
	Consumption of iodized salt	58 (57.4 – 58.6)

Table 3.4. Comparison of indicators from SUDEHI and NCD STEPS survey in rural Haryana

Domain	Indicators	SUDEHI estimate (95% CI)	NCDRF survey estimate (95% CI)	P value
Individual section	Current use of tobacco (males)	52 % (48.5 – 55.5%)	50% (46.2-53.8%)	0.77
	Current use of tobacco (females)	16% (14.1 – 17.9%)	18% (15.1-20.9%)	0.14
	Mean number of days of consumption of fruits (males)	1.5 days (1.4-1.6)	2.1 days (1.9-2.1)	0.75
	Mean number of days of consumption of fruits (females)	1.3 days (1.2-1.4)	1.4 days (1.3-1.5)	0.90
	Mean waist circumference (males)	76.7cm (76.2-77.2)	77.4 cm (76.9-77.9)	0.84
	Mean waist circumference (females)	74.1cm (73.6-74.6)	74.3 cm (73.7-74.9)	0.86
	Measurement of blood sugar within one year (males)	6.9 % (6.0 – 7.8 %)	4.3 % (2.8-5.8%)	0.63
	Measurement of blood sugar within one year (females)	4.1% (3.6 – 4.6 %)	3.2% (1.9-4.5%)	0.11

3.5. Disease Surveillance

Currently Disease surveillance is done under the National Integrated Disease Surveillance Program. Reports from PHCs and Ballabgarh Hospital are sent weekly. These morbidities are not linked to the MIS. A summary of the morbidity profile of Ballabgarh is shown in tabular form below. The term “syndromic surveillance” applies to surveillance using health-related data that precede diagnosis and signal a sufficient probability of a case or an outbreak to warrant further public health response. Syndromic surveillance from PHCs is shown in Table 3.5.

Table 3.5. PHC based syndromic surveillance at CRHSP (reported as a part of the integrated disease surveillance program)

Diagnosis name	Jan	Feb	Mar	April	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Fever													
<7 days	31	30	113	47	31	43	112	104	170	90	43	19	833
>7days	2	2	0	8	2	0	5	5	14	9	7	2	56
Measles	0	0	0	0	1	0	0	0	0	0	0	0	1
Typhoid	0	0	0	1	3	3	2	0	0	0	1	0	10
Cough with or without fever													
<3 weeks-ARI	100	148	215	134	103	180	297	151	140	121	238	158	1985
>3 weeks	12	15	37	32	16	28	23	10	24	22	53	21	293
Loose Watery Stools of < 2 weeks													
With some dehydration	3	2	12	10	8	26	9	1	6	0	3	1	81
With no dehydration	5	15	24	67	124	98	29	19	27	9	14	11	442
With blood in Stool	1	1	1	5	20	16	5	2	3	1	1	2	58
Jaundice cases of < 4 weeks	0	0	0	0	0	1	1	0	0	0	0	0	2
	154	213	402	304	308	395	483	292	384	252	360	214	3761

The disease profile of patients treated at Civil Hospital, Ballabgarh classified as per International Statistical Classification of Diseases and Related Health Problems 10th Revision (ICD 10) is presented in table 3.6 below. The ICD is used to classify diseases and other health problems recorded on many types of health and vital records including death certificates and hospital records. In addition to enabling the storage and retrieval of diagnostic information for clinical and epidemiological purposes,

these also provide the basis for the compilation of national mortality and morbidity statistics and many health management purposes.

Table 3.6. Morbidity Profile of patients attending Civil Hospital, Ballabgarh as per International Statistical Classification of Diseases and Related Health Problems (10th Revision)

Disease Classification	OPD (%)	In Patient (%)	Death - In Patient (%)
I. Certain infectious and parasitic diseases	11805(13.53)	488(10.82)	4(6.67)
II. Neoplasms	12(0.01)	2(0.04)	0(0)
III. Diseases of the blood , blood forming organs & immune disorders	150(0.17)	34(0.75)	0(0)
IV. Endocrine, nutritional and metabolic diseases	199(0.23)	24(0.53)	0(0)
V. Mental and behavioural disorders	143(0.16)	7(0.16)	0(0)
VI. Diseases of the nervous system	120(0.14)	19(0.42)	0(0)
VII. Diseases of the eye and adnexa	478(0.55)	76(1.68)	0(0)
VIII. Diseases of the ear and mastoid process	3138(3.60)	2(0.04)	0(0)
IX. Diseases of the circulatory system	625(0.72)	71(1.57)	15(25.00)
X. Diseases of respiratory tract	9657(11.06)	90(1.99)	8(13.33)
XI. Diseases of the digestive system	11994(13.74)	1069(23.69)	1(1.67)
XII. Diseases of the skin and subcutaneous tissue	4081(4.68)	10(0.22)	0(0)
XIII. Diseases of musculoskeletal system and connective tissue	17387(19.92)	1(0.02)	(0)
XIV. Diseases of genitourinary system	3687(4.22)	110(2.44)	0(0)
XV. Pregnancy, childbirth and the puerperium	8506(9.75)	1730(38.34)	0(0)
XVI. Certain conditions originating in perinatal period	179(0.21)	30(0.66)	7(11.67)
XVII. Congenital malformations, deformations and chromosomal abnormalities	4(0.00)	4(0.09)	2(3.33)
XVIII. Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	14234(16.31)	483(10.70)	7(11.67)
XIX. Injury, poisoning and certain other consequences of external cause	786(0.90)	171(3.79)	7(11.67)
XX. External causes of morbidity and mortality	91(0.10)	91(2.02)	9(15.00)
Total	87276(100)	4512(100)	60(100)

4. Health Management Information System (HMIS) at CRHSP, Ballabgarh

Demographic and health related information of the entire population served by the Primary Health Centres (PHCs) is collected by the health workers on their routine visits, since the beginning of the project. Demographic details of each and every member of a household were recorded in a Family Record Card (FRC). In each family, the birth and death was updated in the FRC and any additional information detected during annual census was also entered. Therefore, health workers generated data in the PHC level, where it is compiled in the form of monthly reports and transferred to the secondary level. However, the flow of data was unidirectional, and there was almost no feedback to the health workers. In addition, a lot of data that the workers collected was never utilized adequately. There was a need to improve data collection, storage and utilization of information at all levels. Efficient management of data was difficult in a manual system, and often involved duplicating of efforts and wastage of time.

It was envisaged that computerization of the data management system would be an appropriate way to address these problems. The experience thus gathered is presented in three phases:

Phase I	:	1998-2002
Phase II	:	2002-2005
Phase III	:	2005 Onwards

4.1. Phase I : (1988-2002)

Management Information Service (MIS) Version 1

The computerized data management system was introduced in the Comprehensive Rural Health Services Project, Ballabgarh in February 1988. Every individual in the project area were assigned an identification number called the unique number. The unique number is a 12-digit number and comprises of codes for project area, primary health centre, village, house number, family number and individual number. This number is present in all the files and serves to access data from any other file and thus links up all the databases.

The MIS was initially aimed at improving health services delivery and was oriented for Maternal and Child Health (MCH) services. Data entry is done once a month, and in addition the data was also updated annually after the census to take care of any event (birth, death, migration etc) that was missed by the worker. At the end of each monthly update, a work plan is generated for the health worker. Figure 4.1 shows the PHC data MIS main menu from which the appropriate activity can be selected be it data entry, data access or report generation.

The work plan lists the monthly activities house wise. It contained information about the families e.g. under five children, pregnant women, eligible couple, geriatric age group or any other person in the family with chronic disease who needs follow up. The work plan also served as a tool for monitoring of the workers by the medical officer and the supervisors.

PHC DATA MANAGEMENT SYSTEM MAIN MENU	
ENTRY A. DEMOGRAPHIC CORRECTIONS B. MARRIAGE INTO VILLAGE C. EMIGRATIONS / MARRIAGE OUT OF VILLAGE D. EMIGRATIONS/ADDITIONS E. DEATHS F. ANTENATAL G. BIRTHS H. IMMUNISATIONS I. ELIGIBLE COUPLE J. RHD K. TB L. WELL Z. DEMOGRAPHIC DELETIONS	ACCESS M. ACCESS
	REPORTS N. WORK PLAN (WHOLE VILLAGE) O. WORK PLAN (BY HOUSE NO.)
	EXIT X. EXIT

Figure 4.1. Main Menu Screen of MIS version 1

4.2. Phase II: (2002-2004)

Shifting of database from Disc Operating System to Windows

The MIS Version 1 was used for about 14 years, time tested, proved its utility and was capable in managing large amounts of data generated from the PHC. With the passage of time, new components have been added in the national programmes like the Revised National Tuberculosis Control Programme (RNTCP), Reproductive &

Child Health (RCH) that were not captured in the old MIS. In addition, with advancing technology there was a need to update the operating system and the programme so that it could be more user-friendly and modifications needed to be made to add more features to the existing database (Figure 4.2).

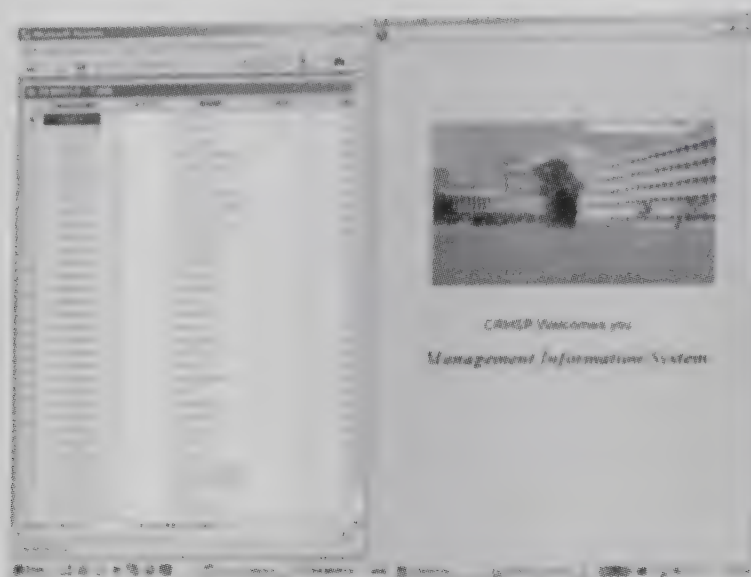


Figure 4.2. Screenshot of MIS Version 2.0

Thus, it was decided to upgrade the current MIS to Version 2.0. In 2000, there was a shift from MS DOS to Windows. The additional features in the new MIS also included consistency checks, drop down menus for simplifying data updation, and provision for addition of variables like cause of death, high risk factors, which were not present in the original version were also incorporated. The iterative process of trial and refining of the new MIS took 3-4 months time.

There were certain limitations with the new MIS. Database in MS-Access is not scalable, cannot handle large database, no security i.e. data can be deleted easily. Windows is licensed software therefore the issue of replicability became important as it may not be cost effective for implementation on a large scale.

4.3. Phase III: (year 2005 onwards)

Development of a generic MIS (desktop level)

As mentioned there are certain limitations with the existing MIS. It serves well for a small population and is being used efficiently for the population of 84,000. However, Windows being licensed software, and other issues of replicability would limit its applicability on a large scale. Therefore, there is a need to develop a more cost effective

and scalable programme, at the same time should be robust and reliable if it is to be implemented on a large scale. To address these issues we have now developed a generic Database Management Information System in Linux (Figure 4.3). This was developed in collaboration with Media Lab Asia. The evolution of the MIS at CRHSP, Ballabgarh over the years is presented in table 4.1 below.

Table 4.1 Evolution of Computerized Management Information System

Features	1988-2002	2002 -2005	2005 onwards
Operating system	MS DOS	Windows	Linux
Software	Foxpro	Visual Basic	Java
Database	Dbase III	Microsoft Access	MySql



Figure 4.3 Screenshot of MIS Version 3.0

4.4 Advantages of a computerized MIS

4.4.1. Service delivery and management

The main advantage of computerized MIS was that data processing was faster, and retrieval of data could be done rapidly. It provided a better tool for monitoring and assessing the health worker's performance in a more objective manner. It aided in report generation monthly and annual reports were generated easily and rapidly. This system also catered to the information needs of the District Health Administration and avoided the need for resurveys. It was also possible to address loose end queries or generating unscheduled reports besides the routine. The MIS has been indispensable for service delivery and also greatly helped in administration.



4.4.2 Research

Another offshoot of the MIS was it could be used in research activities, since accurate data was available for the entire population and over a long period of time. Many papers have been written and published based on the analysis of secondary data generated by MIS. The MIS contains provides a valuable platform for carrying out population based cohort studies since accurate data is available for a stable population covering almost 84,000 people.

The project team also has experimented with other Information Technology (IT) based system like use of handheld computers by workers (Figure 4.4.) as well as Geographical Information System (GIS).



Figure 4.4. Health worker using handheld device for data collection

5. Educational Activities at CRHSP, Ballabgarh

The undergraduate and post graduate students at the AIIMS go through a rigorous and extensive training programme in Community Medicine.

5.1. Undergraduate teaching

The M.B.B.S students training at AIIMS is very rigorous and well organized. The duration and distribution of posting for M.B.B.S students is given in table 5.1. There are two components – urban posting and rural posting.

Urban posting is in 4th and 5th semesters while the rural posting is in the 7th semester.

The urban posting has two parts- Urban Family Health Advisory Services (FHAS) which is once a week (2 hours) on Monday afternoons for a period of 9 months. The second part is Urban Health Posting which is for 3 hours a day in the mornings for 45 continuous days.

Table 5.1. Duration & distribution of postings for MBBS students and interns in department of Community Medicine, AIIMS

Semester	1	2	3	4	5	6	7	8	9	Internship	Duration
Urban (FHAS)											Once a week for 2 hrs for 9 months(afternoon)
Urban (UHP)											3 hrs a day x 45 days (morning)
Rural											Residential posting for 6 weeks in CRHSP
											Residential posting for 3 months in CRHSP

The MBBS students are posted in CRHSP, Ballabgarh as a part of their rural training in Community Medicine. This is for a period of six weeks during the 7th semester. It is a residential posting where the students are required to stay on campus for the entire period.

The components of training programme are briefly as follows:

5.1.1. Clinical Skills

Students are exposed to various kinds of health problems in a rural area which can be managed in a primary and secondary level. This is facilitated by the faculty members from clinical disciplines from AIIMS (namely, Medicine, Obstetrics & Gynecology, Surgery, Ophthalmology, Pediatrics, Physical Medicine & Rehabilitation) and their respective senior residents.

5.1.2. Epidemiological exercise

The students carry out community based studies in the rural areas. Here too, the students take an active part in planning, carrying out the exercises and community intervention under the guidance of the faculty members, and staff.

5.1.3. Health care delivery system in rural area

Visits are arranged to the District hospital, Community Health Centre and a Primary Health Centre run by the State government of Haryana with the objective of exposing the students to the national health system in the rural areas.

5.1.4. Domiciliary visits

Visits are made to the families with selected health problems to understand the dynamics of health and disease transmission in a family and community setting.

The areas covered in the Community Medicine postings are in tune with the requirements of the Primary Health Care concept. The curriculum has been designed to integrate all the eight components and to orient the students to the various aspects of primary health care.

5.2. Internship

As per the Medical Council of India (MCI) requirement, the total duration of posting in rural areas is for 12 weeks. The posting is divided into two parts

5.2.1. CRHSP Hospital

In this 6 weeks posting, the students get first hand opportunity in patient management in the specialties of Medicine, Obstetrics & Gynecology, Surgery, Ophthalmology, Pediatrics, under the guidance of residents and faculty members.

5.2.2. Primary Health Centre

This posting gives the students a different perspective of health in rural set up e.g. an exposure of the health system in the rural area at close quarters since they are required to stay in the Primary Health Centre, for 6 weeks. This also helps them to understand the intricacies of factors influencing health in rural

areas e.g. socio-economic, political, cultural factors etc. , and the importance of promotive and preventive medicine.

5.2.3. Monitoring & evaluation

i) Log book

A log book has been designed to keep a record of all the activities of the undergraduates in Community Medicine on a daily basis. It also provides the details of the postings e.g. objectives, methodology, assessment, etc.

ii) Assessment

The assessment of students' performance is carried out in an objective manner. Different faculty members are assigned responsibility of individual activities and all components are evaluated separately. The detailed breakup of marks is given below in table 5.2.

The evaluation of Interns is done by senior residents who supervise them in their daily activities and an overall assessment by the faculty members. An award in the name of the former Director, AIIMS, 'Prof V Ramalingaswami Award', is also conferred on the best intern posted at CRHSP, Ballabgarh.

Table 5.2. Distribution of theory & practical marks in M.B.B.S. in Community Medicine

Semester	Posting/Examination	Theory	Practical	Total (%)
IV-V	Urban Health Centre Posting	25	25	50 (8.33%)
IV-V	Family Health Advisory Service	25	25	50 (8.33%)
VII	Comprehensive Rural Hospital Services Project, Ballabgarh	25	25	50 (8.34%)
IX	Pre-professional Examination	75	75	150 (25%)
IX	Professional Examination	150	150	300(50%)
MBBS	TOTAL	300	300	600(100%)

5.3. Junior Residents

The Junior Residents are posted for a period of 15 months at Comprehensive Rural Health Services Project (CRHSP) in Ballabgarh, Haryana. There are two components of the posting; academic activities and clinical services which are carried out simultaneously.

5.3.1. Academic activities

The posting at Ballabgarh Project covers the following aspects of Community Medicine.

- i) Certain courses which have been allotted to the Ballabgarh Project are covered during this period. The courses covered at Ballabgarh are -
 - Communicable diseases
 - Primary Health Care & Family practice
 - Public Health Nutrition – practical aspects
 - Occupational health
 - MCH services in rural area
- ii) Community based studies on various topics so as to make the students familiar with epidemiological approach to health problems.
- iii) Practical aspects in delivery of primary health care.
- iv) Medical care at primary and secondary level
- v) Teaching and training of students, interns and field workers.

The coverage of the courses mentioned above is done through field visits, exercises, topic presentations and case/family presentations.

For the above mentioned training programme this posting is divided into two parts:

- The posting at the Ballabgarh Hospital for a period of 7 to 8 months.
- Posting in PHC, Dayalpur or PHC, Chhainsa for the next 7 to 8 months.

5.3.2. Field Visits

- i) Visit to a state PHC & a Community Health Centre (CHC)
- ii) Visit to an eye camp.
- iii) Visit to Employees State Insurance (ESI) office
- iv) Visit to District Tuberculosis centre, District immunization officer
- v). Visit to Hyderabad Industries

5.3.3. Seminar presentation

Each postgraduate is allotted topics to be presented during the semester. It is understood that postgraduates have the knowledge at undergraduate level. Hence basic information need not be repeated but it should be available, if asked for. Recent advances & research carried out at the AIIMS are also required to be known.

5.3.4. Family and Case Presentation

The discussion on family and case presentation focuses on clinical features, natural history of the condition and comprehensive management.

5.3.5. PHC Posting

During the posting at PHC Chhainsa/ Dayalpur the Junior Resident learns the following activities, in consultation with the Senior Resident:

- i) PHC functioning in the field
 - Staffing pattern
 - Area Covered
 - System of working including computerized MIS
 - Job responsibilities of different workers
 - Record maintained by the workers
 - Supervision of workers
 - Completeness of records at sub centre (SC) /primary health centre (PHC)
- ii) PHC store indenting and maintenance of stock registers
- iii) Reporting system
- iv) Implementation of National programmes
(Activities of PHC compared with the national programme)
- v) School health examination
- vi) Anganwadi visit
- vii) Immunization
- viii) Family Planning activities
- viii) Attending subcentres once a week for
 - a) Clinical service supervisor of interns
 - b) Record checking
 - c) Birth / death verifications

- ix) Training of workers/Trained Birth Attendants (TBA) /Anganwadi workers
- x) Training of workers/TBA/Anganwadi workers
- xii) Health education at the SC/PHC
 - in the field / Anganwadis
 - in the OPD at SC/PHC /MCH Clinic

5.3.6. Subcentre evaluation

Each student is allotted one subcentre for evaluation of the functioning of the subcentre and an evaluation of any one of the national programmes.

5.3.7. Preceptor of Undergraduate MBBS students

The undergraduate MBBS students are posted at Ballabgarh for 5 weeks. To each batch of about ten to fifteen students, one post graduate is attached as a preceptor. His/Her job is guiding them through out the posting in all matters. Briefly job responsibilities as a preceptor include:

- i) **Field Visits:** Accompanies them to all field visits like Kurali, CMO's/ District TB office etc.
- ii) **Epidemiological Exercise:** Junior Residents guide the students at every stage - from topic selection to presentation. They attend all discussions regarding the exercise, accompany the students to the field, and are actively involved in data entry, analysis and presentation.
- iii) **Domiciliary Visits:** The students are required to visit an antenatal case, a tuberculosis patient and a malnourished child. Junior Residents accompany them on these visits and guide them in taking proper history, examination and comprehensive management.

5.3.8. Clinical posting

In order to provide an opportunity for Junior Residents to keep in touch with clinical medicine, especially in disciplines needed for community health care like Medicine, Surgery, Obstetrics & Gynecology, Pediatrics, Ophthalmology, Physical Medicine and Rehabilitation, they undergo clinical postings by rotation.

6. Research Activities at CRHSP, Ballabgarh over the Years

While in the initial years, the focus was on setting up the necessary system for undergraduate teaching, research has always been a part of the mandate. In the early years, focus was on demographic surveillance and primary health care, it then shifted to maternal and child health care delivery system. In more recent years, the focus has been on non-communicable diseases.

6.1. Research Projects

The different research projects carried out at CRHSP, Ballabgarh since 1965 are presented in table 6.1.

Table 6.1. Research Projects at CRHSP, Ballabgarh

S.No.	Year	Title
1	1965	<i>Training of Male and Female workers</i> (Funding: AIIMS) This was done at the beginning of the project, when all the male and female recruited for the project area were trained. The content and the curriculum for these courses were defined and the teaching methodology identified.
2	1966-71	<i>Use of Lay informant for collection of vital statistics</i> (Funding: AIIMS) This was a feasibility study to assess whether lay informants like dais, shopkeepers etc. can be used to collect information about births, deaths and marriages. It was concluded that this is feasible.
3	1968-72	<i>Small Pox Surveillance</i> (Funding: AIIMS) The process of surveillance and containment of small pox cases was started in 1968 much before this was started at national level. Incidentally the last case of small pox in this area was reported in 1972.

4	1972	<p><i>Implementation of Multi-purpose worker scheme</i></p> <p><i>(Funding: AIIMS)</i></p> <p>It was decided to try out a model where a primary health centre would cater to population of about 30,000 with five sub- centres. This was implemented in Dayalpur. Five subcentres were formed, each covering 3-5 villages and looking after a population of about 5,000 residents. The uni-purpose workers (malaria, tuberculosis, family planning etc) were given in service training for a short period so as to enable them to function as multipurpose workers, to provide preventive, promotive services at the doorstep. In 1973, the element of curative care was added to the list of the workers' assignments. Based on the experience of CRHSP Ballabgarh in 1977, the system of multipurpose workers was implemented at national level.</p>
5	1972-74	<p><i>Iron Fortified salt for control of anemia.</i></p> <p><i>(Funding: ICMR)</i></p> <p>This was a multicentric study done at Hyderabad, Calcutta and Ballabgarh to study the feasibility of using iron-fortified salt for the control of anemia. The study successfully demonstrated that the community had a good compliance and it is feasible to use this strategy for control of anemia.</p>
6	1968-72	<p><i>Use of Lippe's Loop for contraception</i></p> <p><i>(Funding: FPAL)</i></p> <p>This study was done to see the effectiveness and feasibility of Lippes Loop. The study proved that loop is effective and is acceptable to women and therefore this should be available as a part of the National Family Welfare programme.</p>
7	1980-82	<p><i>Use of Norplant Lippe's Loop for contraception</i></p> <p><i>(Funding: ICMR)</i></p> <p>This study was done to see the effectiveness and feasibility of Norplant as a method of contraception among women. The study proved that Norplant is effective and acceptable to women. In fact, there was a great demand for this service and when the study was over the community demanded that this service be continued</p>

8	1981-87	<p><i>RF/RHD: Prevalence and its control</i></p> <p><i>(Funding: ICMR)</i></p> <p>The study was done to assess the prevalence of Rheumatic Fever and Rheumatic Heart Disease in the school children. Also tested was the feasibility of using the male health workers for primary and secondary penicillin prophylaxis against RF. This was a multicentric study done at Ballabgarh, Varansai and Vellore. The prevalence was estimated as 10 per 1000 school children. And workers were able to identify RF/RHD cases and provide secondary prophylaxis to the diagnosed cases.</p>
9	1983-85	<p><i>Epidemiology of Measles</i></p> <p>This was a prospective study done to assess the incidence and case fatality of measles in the rural area. The workers were used to identify suspected cases of measles which were later confirmed by a doctor. As the study was done before measles vaccination was used this served as a baseline to assess the effectiveness of vaccination.</p>
10	1986-89	<p><i>Study of ARI incidence and control</i></p> <p><i>(Funding: ICMR)</i></p> <p>This was a part of multicentric study at Bangalore, Chandigarh, Delhi and Ballabgarh to assess the incidence of ARI in under-fives and to test whether multipurpose workers can be trained to recognize and manage ARIs. This was successfully demonstrated in the project area. This is now included as a part of the MCH package for the PHCs.</p>
11	1978-81	<p><i>Project on community participation and development</i></p> <p><i>(Funding: WHO)</i></p> <p>The study tries to assess the success of community participation in health care in the villages. Two villages were chosen. In Sikrona, efforts were made for community involvement in delivery of health care services and village Gharona served as the control village. Though the study demonstrated the success of this approach, the community's involvement was limited to curative services only.</p>

12	1984-87	<p><i>Prevalence of neurological disorders in rural area</i> <i>(Funding: NIH, USA)</i></p> <p>The study was done to assess the prevalence of neurological disorders in the rural area. The survey was later continued till 1995 with the funding from ICMR.</p>
13	1985-87	<p><i>Iron supplementation to pregnant women</i> <i>(Funding: ICMR)</i></p> <p>The study was a part of the multicentric study to determine the appropriate dose of iron and folic acid for supplementation during pregnancy. Based on this study, the iron content of adult Folifer was increased from 60 mg elemental iron to 100 mg of elemental iron.</p>
14	1990	<p><i>Prevalence of Alzheimer's disease in rural India</i> <i>(Funding University of Philadelphia and Centre for Aging Research, Delhi.)</i></p> <p>The study assessed the physical and mental functioning of people above 60 years to assess the prevalence of Alzheimer's disease. It found a much lower prevalence than that reported in the western Literature.</p>
15	1987-91	<p><i>Computerized Health Management Information system</i> <i>(Funding: Ford Foundation)</i></p> <p>The manual health management system is cumbersome, takes time and data retrieval is difficult. With the advent of computers, we decided to experiment with the computerized data management system. Currently, demographic and health data on all the residents of the 28 villages under CRHSP has been entered into the computer. This has enabled us to get any information about this community by sitting at Ballabgarh. List of eligible couples, FP acceptors, immunization eligible etc. can be generated from the computer.</p>

16	1991-93	<p><i>Prevalence of Coronary Heart Disease and its Risk Factor</i> <i>(Funding: ICMR and MRC, London.)</i></p> <p>The study assessed the prevalence of CHD and its risk factors in the rural area. It proved that, contrary to conventional wisdom, CHD is a problem in the rural areas as well. This study has resulted in the Ministry of Health to consider the feasibility of launching a national level CHD prevention programme. A resurvey is currently being planned to study the trend of the disease.</p>
17	1993-97	<p><i>Study of deficiencies in preventive measures and resulting health hazards among agricultural workers using insecticides.</i></p>
18	1993-97	<p><i>Early detection of INH resistance M. Tuberculosis from sputum positive samples by DNA probe.</i></p>
19	1993-97	<p><i>A study of dengue virus infection in urban slums and rural areas around Delhi.</i></p>
20	1997-98	<p><i>A study of prevalence of malocclusion and dental caries in school children in rural Haryana</i></p>
21	2001-02	<p><i>Determination of cost of treatment in vaccine preventable diseases</i> <i>(Funding CVI-WHO)</i></p> <p>The study estimated the cost of treatment of diarrhea, ARI and meningitis in public and private sector health facilities at primary, secondary and tertiary levels.</p>
22	2001-02	<p><i>Identifying health priorities for India in 21st century</i> <i>(HELPONET, IIM Ahmedabad)</i></p> <p>The study aimed at assessing the conflicts and consensus in the health sector reforms in India using a Delphi approach.</p>
23	2002-03	<p><i>Feasibility of involvement of private Medical Practitioners in RNTCP</i> <i>(Funding WHO)</i></p> <p>The role of private medical practitioners in rural and urban areas of both modern medicine and Indian Systems of Medicine were explored in the case finding, and case holding for tuberculosis.</p>

24	2003-05	<i>Comparative Evaluation of a single versus double freeze cryo-therapy in management of cervical intraepithelial neoplasia. (Funded by: IARC)</i>
25	2003-05	<i>Acute viral respiratory infections in rural India. (Funded by: Indo-US program on MCHDR)</i>
26	2003-05	<i>Development of Sentinel Health Monitoring centres for NCDs in India. (Funded by WHO)</i>
27	2003-05	<i>Reliability and Validity of Global Physical Activity Questionnaire (GPAQ) and Indian Physical Activity Questionnaire (IPAQ). (Funded by WHO)</i>
28	2004-05	<i>Strengthening Health Services In Rural Areas Using Information Technology. Funded By: Media Lab Asia.</i>
29	2004-05	<i>Effectiveness of 3 day amoxycillin versus 5 day co-trimoxazole in the treatment of non-severe pneumonia in children aged 2- 59 months of age: a multi-centric open labeled trial. (Funded by : ICMR-INDIACLEN)</i>
30	2004-05	<i>Effect of consumption of Iron and Vitamin A –fortified lozenges on the Iron status of children aged 3-6 years in rural Haryana. (Funded by Micronutrient Initiative.)</i>
31	2004-05	<i>Development of appropriate Prevention and Intervention strategies for non-communicable nutritional related disorders among women in post-reproductive period: a multi-site study. (Funded by Government of India)</i>
32	2005-08	<i>Field testing of psychoses identification questionnaire in the community of CRHSP, Ballabgarh, India for WHO- SEARO.</i>
33	2005-08	<i>Survey on prevalence of tuberculosis in District Faridabad (Funding Ministry of Health & Family Survey).</i>
34	2005-08	<i>Development of a model for strengthening of existing health system to address Non Communicable Diseases in India. (Funding ICMR)</i>

Public Health Initiatives at Ballabgarh

- ⊕ Multi Purpose Worker (MPW) scheme in 1972
- ⊕ Addition of curative services to MPWs in 1973
- ⊕ Birth & death registration by MPWs - 1975
- ⊕ Rheumatic Fever/Rheumatic Heart Disease (RF/RHD) control - pilot testing 1981-5
- ⊕ Acute Respiratory Track Infection (ARI) Case management Pilot testing 1986-89
- ⊕ Pulse Polio strategy of giving polio drops to all children on a single day - 1985
- ⊕ Field trial of High Dose Iron and Folic Acid (IFA) for Pregnancy – 1987-88
- ⊕ Introduction of Computerized Health Management Information System (HMIS) - 1988
- ⊕ Non Communicable Disease (NCD) Risk Factor surveillance - 2002
- ⊕ Community-based intervention for NCD Prevention and control – 2003 to 2007.
- ⊕ Role of MPWs in NCD Prevention and control - 2007

6.2 Thesis and Dissertations

A number of postgraduate students conducted studies in the field practice area of CRHSP, Ballabgarh for their thesis/dissertations as a part of their postgraduate training. List of thesis/dissertations from CRHSP is presented below in table 6.2.

Table 6.2. List of thesis dissertations from CRHSP Ballabgarh

S.No.	Year	Candidate	Thesis title
1	1964	Dr. R. N. Midhya	A study to investigate the influence of socioeconomic and environmental factors on birth weight.
2	1969	Dr. K. Padma	Comparison study of two intrauterine devices: Lippes Loop B (27.5mm) & Polygon (medium.)
3	1969	Dr. O.P. Aggarwal	Study on the etiology of perinatal mortality among hospital deliveries.
4	1972	Dr. K. Raghav Prasad	Clinical field trial of oral contraceptives regarding acceptability, adverse effect and efficacy among rural and semi urban woman, New Delhi.
5	1975	Dr. V.K. Gandotra	Follow-up of study into medical psychological and sexual aspects of vasectomy cases.
6	1976	Dr. A.T. Kannan	Antibody response to TT vaccine in pregnant women.
7	1978	Dr. Suresh Kapoor	A study of role of paramedical field staff in provision of medical care.
8	1981	Dr. Bela Shah	Seroepidemiology of malaria: a study using the indirect antibody test.
9	1983	Dr. R.D. Rao	Enquiry into reasons for permanent default from domiciliary treatment of TB in a rural area.
10	1983	Dr. A.M. Ganai	An epidemiologic study of hypertension in an Indian rural community.
11	1983	Dr. Gajender Meena	Prevalence of dental caries and its relation to fluoride levels in drinking waters among middle school children in rural areas of Haryana.
12	1985	Dr. G.V.S Murthy	Study of pregnancy wastage in a rural community: Chhainsa & Dayalpur.

13	1985	Dr. Saudan Singh	A study of breast feeding practices in a rural community of Haryana.
14	1985	Dr. Kaushik Bandopadhyay	Seropositivity to the three polio viruses in children of 3-4 yrs and their response to single dose of oral polio vaccine.
15	1986	Dr. D.S. Jamwal	An epidemiological study of chronic respiratory diseases in adults of a rural community.
16	1988	Dr. Arun Kumar Bansal	The effect of mass intervention against ascariasis and giardiasis on growth of rural children aged 1 to 5 yrs.
17	1989	Dr. B. Krishnaveni	To evaluate knowledge, attitude and practices of traditional birth attendants in a rural area regarding pregnancy, child birth and puerperium.
18	1989	Dr. Gagan Singh Sonal	Epidemiological study of skin diseases in school children of village Chhainsa.
19	1989	Dr. Karunesh Tuli	Development and evaluation of a computer based data base management system for a primary health centre.
20	1989	Dr. T.K. Jena	Survey of the nutritional status of preschool children in the rural area of Ballabgarh.
21	1990	Dr. K. Anand	Incidence of diarrhoeal diseases in under fives; its association with nutritional status and effect of health education on incidence of diarrhoea.
22	1991	Dr. J.G. Prasuna	Descriptive study of patient compliance to instruction and health advise given in OPD and clinics at the CRHSP area Ballabgarh.
23	1991	Dr. Dorjee Rinzing	An epidemiological study of hypertension in adolescents attending rural schools in Ballabgarh area.

24	1994	Dr. B.R. Shamanna	RCT on using low dose aspirin & antimalarial drug chloroquine on the birth weight of infants in a rural area of Haryana.
25	1995	Dr. D. Pattanaik	Prevalence of breast disorders & menstrual dysfunctions among rural school girls of Haryana.
26	1995	Dr. V.K. Nagraj	Evaluation of an effective & safe method of sputum examination to estimate the prevalence of sputum positivity among the adult chest symptomatics in rural community of Dayalpur PHC.
27	1995	Dr. Usharani Longjam	A study of causes of death in children under five years using verbal autopsy as a diagnostic tool.
28	1997	Dr. Paras Kr. Pokharel	Prevalence of Bronchial asthma in school going children of rural Haryana and risk factors associated with it.
29	1997	Dr. Noel D'Souza	Treatment seeking behaviour of women for their own and their children's perceived selected health problems in a Haryana.
30	1998	Dr. Akoijam Singh Brogen	Sero prevalence of toxoplasma infection among primigravid women attending antenatal clinic at CRHSP Ballabgarh.
31	1999	Dr. N. Baridalyne	Prevalence of fragility fractures in women age in 55 years and above in rural community in Haryana.
32	1999	Dr. Rashmi	Incidence of accident related to agricultural activity in a village of Haryana, Ballabgarh.
33	2000	Dr. Tapas Kr. Ray	Out-of-pocket Family expenditure on health care in Chhainsa Village Haryana.

34	2000	Dr. H Kulabidhu Singh	Process evaluation of national Child Survival and Safe Motherhood (CSSM) programme through essential new born care and safe delivery practices in Ballabgarh Block
35	2001	Dr. B. Vijayan	Appraisal of diabetes mellitus as a public health problem in villages under CRHSP Ballabgarh Haryana.
36	2002	Dr. Anil Goswami	Health Status of the aged in a rural community. (PhD)
37	2003	Dr. Binod Kr. Patro	Health insurance - an assessment of community perception and willingness to pay in a rural set-up.
38	2003	Dr. Hemant Shukla	Knowledge and acceptability of emergency contraceptive among patient seeking medical termination of pregnancy Ballabgarh
39	2003	Dr. Biplab Jamatia	Prevalence of risk factors for non-communicable disease among factory employees and implementation of a risk factor control programme.
40	2003	Dr. Siddhartha Saha	Evaluation of a Tuberculosis unit of Ballabgarh block of Haryana.
41	2004	Dr. Somdatta Patra	Study of morbidity in women during postpartum period in a village of Haryana.
42	2004	Dr. Srinath S.	Iodine status of pregnant women attending antenatal care clinic at Comprehensive Rural Health Services Project Ballabgarh, Haryana, North India.
43	2004	Dr. Suresh V.	Assessment of the health worker based Communicable Disease Surveillance System in villages under the C.R.H.S.P., Ballabgarh and the feasibility of using low cost computing devices for it

44	2005	Dr Vivek Gupta	A study of the knowledge and the prevalence of risk factors for non-communicable disease, among middle school children in Ballabgarh block Haryana.
45	2005	Dr. Kapil Yadav	A study of the influence of spouses over each other's fertility desire & contraceptive approval in Ballabgarh block, Haryana, India.
46	2005	Dr. Niki Shrestha	A study of depression in the postpartum period in a rural community in Ballabgarh.
47	2006	Dr. Roopa S.	A study of obesity among women in rural and urban Ballabgarh, Haryana.

6.3. Undergraduate Projects

As a part of their VIIth semester posting, undergraduate students carry out community based projects. The list of under graduate projects is presented in table 6.3.

Table 6.3 List of undergraduate projects

YEAR	BATCH	TOPIC
1983	1	Diarrheal study at village Sahupura.
	2	A study of chronic respiratory diseases with special reference to Tuberculosis in village Chandawali.
	3	To assess the prevalence of Protein Energy Malnutrition (PEM) in under 5 children of village Mujeri.
	4	Assessment of nutritional status and immunization status in under 5 children of village Malerna.
1984	1	To find out the prevalence of physically handicapped people in village Machhgar.
	2	A study of auditory and visual impairment in rural/school children.
	3	Assessment of immunization in rural school children; Assessment of immunization coverage for children 12 to 24 months age group in 22 villages of Ballabgarh Block.
	4	Period prevalence of acute respiratory illness.
1985	1	An epidemiological study of acute eye disease in rural areas.
	2	A study of the prevalence of Anaemia in the females of the reproductive age group in village Chandawali
	3	Prevalence of common skin disorders in a rural children.
	4	To evaluate developmental milestones in children from 0-3 years of age by a cross sectional study.
1986	1	A study on the acceptability of oral Rehydration Therapy in village Sotai.
	2	A study of feeding practices for children upto 3 years in rural mothers.
	3	A study of hypertension in a rural community.
1987	1	Survey on Immunization coverage.
	2	Prevalence of dental problems in school children- a study in a rural community in Haryana.

1988	1	A study on arthritic disorders on the community.
	2	Prevalence of breast diseases in the community.
	3	To study the prevalence of high risk factors in pregnancies and to execute a relevant intervention programme in the community.
	4	The knowledge and practice of family planning method in Machhgar.
1989	1	To study the prevalence of vitamin A & D deficiency and to correlate with various factors.
	2	To study prevalence of geriatric problems in the rural population.
	3	The practice of early marriage in the community; the effect of early pregnancy and improper spacing on maternal and child health.
	4	Epidemiological exercise on infertility; study of the prevalence' possible causes and psychosocial impact on the female partner of the infertile couple.
1990	1	Lameness survey in an urban slum.
	2	A study of the knowledge and practices of mothers in the rural community regarding acute respiratory infections in their children under 6 years of age. The status of the girl child in the rural community.
	3	A study of utilization and efficiency of Government Health Services.
1991	1	Comparative study to evaluate the impact of certain selected activities of ICDS scheme on a section of beneficiaries.
	2	To study the knowledge and practice of contraceptive usage in a rural community.
	3	To study the knowledge and practice regarding the use of Tobacco based products in a rural community.
	4	A study of agriculture related morbidity in the community.
1992	1	A study of prevalence of early marriage, its effects on the reproductive life of the women and of contraception use in a rural community. To study the prevalence of diarrhoea in under five years old children in a rural area in relation to water supply and other causative factor.
	2	
	3	Study of the impact of educational status of parents on health related practices.
	4	Study of factors affecting post partum amenorrhoea.
1993	1	A study of prevalence of Gastro-Intestinal worm infection in school children in a rural area and the study of knowledge and practices of their parents regarding it.

	2	A cross sectional study to find out the prevalence of vaginal discharge in the age group of 15-45 years in the rural population of Ballabgarh block.
	3	The prevalence of seizures and paralysis in rural community.
	4	A study of prevalence of chronic suppurative Otitis Media (CSOM) in children of age group 5-15 years Chandawali and knowledge and practice of mothers regarding Ear discharge.
1994	1	A study of Alcohol intake in the adult males of rural Haryana.
	2	Utilization of family welfare services in rural community of Haryana.
	3	A case control study on the Association of unregulated fertility, dietary factors and infections with male nutrition in 1-5 years old children in rural Haryana.
	4	An assessment of dietary intake of vitamin A, its relationship with clinical Vitamin A deficiency and morbidity in children aged 6-71 months in rural Haryana.
1995	1	Knowledge, attitude and practice of Tuberculosis.
	2	Anaemia in women of reproductive age group and factors associated with it in village Mujeri.
	3	Prevalence of Hypertension in a rural community in Haryana.
	4	A cross- sectional study to determine the prevalence of Angina Pectoris in a rural setting using Rose's questionnaire and to study its association with certain risk factors in the age group of 30-60 years.
1996	1	Study of domestic accidents in children in rural Haryana.
	2	The prevalence of iodine deficiency disorders and the use of iodised salt in rural community in Haryana.
	3	Prevalence of Br. Asthma in children aged 5-15 years in a rural Indian population.
	4	Health seeking behaviour for neonates in rural community in Haryana.
1997	1	Study of prevalence of infant (below 1 year) morbidity in a rural population of Haryana.
	2	Knowledge and practices regarding febrile illness with emphasis on Malaria in a rural community of Haryana.
	3	Community diagnosis of village Sikrona.
	4	Knowledge of dengue and its prevention in village Machhgar (Ballabgarh,

		Haryana).
1998	1	Acceptability of DOTS strategy in village Machhgarh.
	2	Nutritional assessment of adolescents, 12-18 years of age in Rajkia Verish Madhyamik Vidhyalya at Chandawali.
	3	Prevalence of depression in a rural community in Haryana.
	4	Prevalence of non-prescribed drug usage in rural community of district Faridabad, Haryana.
1999	1	Study of Abortions in setting or rural Haryana.
	2	The effect of early age at marriage and birth spacing on maternal health and subsequent fetal outcome.
	3	Prevalence of Safe Injection practices in village Fatehpur Billoch.
2000	1	Study of the prevalence of Blindness and outcomes of cataract surgery in persons greater or equal than 50 years of age in villages Machhgarh and Attali.
	2	A study of the prevalence of obesity associated risk factors and its possible consequences in Chandawali village, Haryana.
	3	Prevalence of stress in a rural population.
	4	A study of prevalence of chronic obstructive Airway diseases (COAD) and its association with smoking and patterns of domestics fuel usage in Bukharpur village in Haryana.
2001	1	A study of cognitive functions and factors associated with it in rural children.
	2	To study the prevalence of peptic ulcer disease symptoms among the general population of Mujeri village, Faridabad district in rural Haryana.
	3	Developmental delay in children.
	4	A study of the process of smoking cessation in a rural Indian population.
2002	1	An epidemiological study to validate interview schedule and to detect the prevalence of psychosis in the rural community.
	2	Dental health in relation to dental hygiene practices in primary school children of rural Ballabgarh.
	3	Prevalence of (OSAS) Obstructive Sleep Apnoea Syndrome in population >18 years in village Mujeri, Haryana.
	4	Perceived gynecological morbidity and its association with early age of marriage in married women of rural Haryana,

2005	1	To describe the prevalence of conduct disorder in a private school of Ballabgarh Tehsil.
	2	Epidemiological Exercise Prevalence of low vision amongst school going children in Ballabgarh Haryana.
	3	A community based study of Injuries in Rural population of Ballabgarh Tehsil.
	4	Prevalence of chronic suppurative otitis media (CSOM) in children of age group 5-15 years and knowledge and practices of mothers regarding ear discharge in Chandawli village Haryana.
2006	1	A study of reproductive tract infections among ever married females of Reproductive age group in a rural community of Haryana.
	2	A study of prevalence of obesity in primary school children of selected schools in rural Haryana.
	3	Study on role of rural health care providers in national health programmes.
	4	Prevalence and pattern of smokeless tobacco usage and its relationship with cardiovascular parameters in adult rural population of a selected village in Ballabgarh block.
2007	1	Study of Behavioral disorders in Adolescents in a rural school setting in Ballabgarh Haryana.
	2	Prevalence of selected cardiovascular risk factors in Rural population of Haryana.
	3	Study of gender disparity in rural population of Haryana.
	4	Prevalence of chest symptomatics and their treatment seeking behaviour in rural population of Haryana.

7. List of Publications from Work Done at CRHSP, Ballabgarh

Sno	Authors	Title of the Article	Journal	Vol (Number)	Pages (start -end)	Year
1.	Bali P, Bhujawala RA	A pilot study of clinico-epidemiological investigation of vaginal discharges in rural women	I.J.M.R.	57	2289-2301	1969
2.	Reddaiah VP, Ramachandran K, Nath LM	Evaluation of working of model registration scheme in Ballabgarh block.	I.J.M.R.	67	467-472	1969
3.	Ghai OP, Chaudhari SN, Jaiswal VN, Kapoor SK, Sinclair S	Nutritional Assessment of Pre-school children of a rural community.	I.J.M.R.	58	1621	1970
4.	Bhatnagar S	Domiciliary Midwifery in rural India.	J. of Obst. Gynae. of India.			1971
5.	Nath LM, Malhotra BD, Parmar BS	Differential death rates in community development block: Ballabgarh 1966-69.	Indian J Med Res.	62(2)	211-7	1974
6.	Nath LM	Training of interns in field practice area.	J.I.A.P.S.M.	1	83	1974
7.	Nath LM, Kapoor SK, Ramachandran ER	Case study of the E.C - AIIMS experiment in Ballabgarh Block. Electronic information and planning. .	Rural Medical communication.	Vol. 5 No		1978
8.	Nath LM, Kapoor SK, Ramachandran ER	Rural Medical communication. Case study of the E.C-AIIMS experiment in Ballabgarh Block.	Electronic information and planning.	Vol. 5 No.		1978
9.	Ray R, Prabhu CG, Mohan D, Nath LM, Neki JS	Psychological correlates of chronic cannabis use	Drug and alcohol dependence	3	235-241	1978
10.	Reddaiah VP, Nath LM	Infant mortality in rural area of comprehensive rural health services project, Ballabgarh.	Indian Paediatrics.	Vol. XV No		1978
11.	Reddaiah VP, Nath LM	Birth and death registration in rural area of C.R.H.S.Project, Ballabgarh	I.J.M.R.	67	1033-37.	1978
12.	Reddaiah VP, Ramachandran K, Nath LM	Evaluation of working of model registration scheme in Ballabgarh block	I.J.M.R	67	467-472.	1978
13.	Nath LM	Delivery of health care to community with particular reference to surgical care of infants and children.	Ann. Natl. Acad. Med.Sci. (India)	15	3-161	1979
14.	Ray R, Prabhu GG, Mohan D, Nath LM, Neki JS	Chronic cannabis use and cognitive functions	IJMR	69	996	1979

15.	Ramachandran K, Kapoor SK, Nath LM, Guha AK	Communication system for better health care.	Electronics Comm Bulletin,			1980
16.	Nath LM, Chowdhury S	Health information system in primary health care in evaluation of Primary health care	ICMR			1980
17.	Kannan AT, Nath LM	Antibody response to Tetanus Toxoid with single and double dose regime I.J.	Communicable diseases	4	18	1981
18.	Bhatnagar S, Malhotra BD	Pattern and sequence of pubertal changes in semi urban girls of Haryana	J.Obst.Gynaec.ICMR New Delhi		163	1981
19.	Nath LM, Kapoor SK	Support services for primary health care appropriate technology for primary health care.	ICMR, New Delhi		43	1981
20.	Sethi NK, Kapoor SK	Mass A Miniature Radiographs Vs. Standard Sized Chest Films for the detection of silicosis. Ind.	J.Indust. Med	29	69	1982
21.	Kannan AT, Nath LM	Antibody response to tetanus Toxoid in malnourished children - comparative study the clinician		47(5)	167	1983
22.	Kapoor SK, Reddaiah VP, Lobo J	Antenatal care and perinatal mortality.	I.J. Paediatrics	52	159-162	1985
23.	Reddaiah VP, Kapoor SK	Risk approach in maternal care.	How beneficial this approach in reality I.J.Paediatrics,		61-65	1985
24.	Reddaiah VP	Child health care	Tropical doctor	15	132-134	1985
25.	Reddaiah VP, Lobo J, Kapoor SK	Mortality due to accidents, violence & poisoning in a rural area.	J. Forensic Medicine & Toxicology	2(1)	12-Aug	1985
26.	Murthy GVS, Reddaiah VP, Kapoor SK,	Profile of Sterilization Acceptors in one of the Districts of Haryana.	Health and Population - Perspective and Issues.	9(4)	218-224	1986
27.	Reddaiah VP, Lobo J, Kapoor SK	Primary Health Care & Referral Services	Indian Journal of Community Medicine	11(3)	185-92	1986
28.	Kapoor SK, Reddaiah VP, Lobo J	Utilization Pattern of Casualty Services in a small town.	Forensic Medicine & Toxicolog	III (3&4),	12-Oct	1986
29.	Bir Singh, Kapoor SK, Lobo J, Reddaiah VP	Changing strategies in Field Immunization Programme in an Indian Rural Area.	Swasth Hind.	31 (24)	97-97	1987

30.	Bir Singh, Kapoor SK, Lobo J, Reddaiah VP	Immunization - Whose Responsibility.	Community Medicine	XII (4)	195-199	1987
31.	Bir Singh, Kapoor SK, Lobo J	More learning, less boredom: (Readers' Forum).	World Health Forum. W.H.O., Geneva	8	3	1987
32.	Bir Singh, Kapoor SK	Helping Babies to be Healthier: "FUTURE".	(UNICEF quarterly publication)	2	21	1987
33.	Bir Singh, Reddaiah VP, Kapoor SK	Health Team Development in a Primary Health Centre- An Experiment.	Health and Population Perspectives and Issues.	10(1)	45-52	1987
34.	Murthy GVS, Kapoor SK, Reddaiah VP, Nath LM	A Study on Pregnancy Wastage in Rural Area of Haryana.	Health and Population Perspectives and Issues.	10(1)	26-34	1987
35.	Murthy GVS, Reddaiah VP, Kapoor SK, Kailash S	Dynamics of Induced Abortions in Rural Community of Haryana Health and Population.	Perspectives and Issues.		104	1987
36.	Lobo J, Reddaiah VP, Kapoor SK, Nath LM	Epidemiology of Measles in a Rural Community.	Indian Journal of Paediatrics	54	261-265	1987
37.	Sanjeev Kumar, Saudan Singh, Nath LM, Kapoor SK, Reddaiah VP, Lobo J, Ramachandran K	Changing Trends in Breast Feeding Attitude and Practices in India: A Need for Appropriate Intervention.	Indian Journal of Community Medicine.	Vol. X(3).	124-136	1987
38.	Sood AK, Kapil U, Kapoor SK	Nutritional status of school children of Rural Haryana.	Indian J of Paediatr.			1988
39.	Sethi N, Kapoor SK, Nath LM, Mukharjee S	Prevalence of Silicosis in stone cutter of Haryana.	Indian J of Occup. Med			1988
40.	Reddaiah VP, Kapoor SK	Acute Respiratory Infections in Rural Underfives.	Indian Journal of Paediatrics		424-426	1988
41.	Reddaiah VP, Lobo J, Kapoor SK, Nath LM	Trends in Underfive Mortality.	Indian Journal Paediatrics.	55	287-94	1988
42.	Tyagi BB, Murthy GVS, Kapoor SK	Demographic characteristics of Deaths and Life Expectancy in Rural Hospital, Ballabgarh (AIIMS) of Haryana State.	Demography India,	18	115-120	1989

43.	Bajaj M, Blah BC, Goyal M, Jain M, Joshi M, Joshi A, HH Ko, Kumar A, Lal A, Mohan ER, Nandi D, Sharma Z, Singh H, Wanyee S	Prevalence of dental problems in school children-a study in a rural community in Haryana.	Indian Journal of Community Medicine.	14(3)	106-9	1989
44.	Murthy GVS, Reddaiah VP, Kapoor SK	Fertility Trends and Pregnancy Wastage in a Rural Area of Haryana.	Indian Journal of Community Medicine 1989	XIV(1)	14-Nov	1989
45.	Lobo J, Kapoor SK	Undergraduates' Experience of Epidemiology.	Ind. J. Community Medicine	XIV(3)	104-05	1989
46.	Kapoor SK, Banerjee AK	Prevalence of common neurological diseases in a rural community of India.	Ind. J. Community Medicine	XIV(4)	171-75	1989
47.	Kapoor SK, Reddaiah VP, Murthy GVS	Knowledge Attitude and Practices regarding Acute Respiratory Infections.	Indian J Paediatr.	57	533-535	1990
48.	Reddaiah VP, Kapoor SK	Epidemiology of Pneumonia in rural, underfives.	Indian J Paediatr	57	701-704	1990
49.	Kapoor SK, Chandra V, Banerjee AK, Nath LM, Schienberg B	Pilot Study of the Prevalence of Major Neurologic Disorders in a Rural Population of India.	Neuroepidemiology	9	287-295	1990
50.	Murthy GVS, Kapoor SK, Karun Makhija	Determinants of Low birth weight in rural areas.	Demography & Population,			1991
51.	Kapoor SK, Reddaiah VP, Lobo J	Control of Tetanus Neonatorum in Rural Area.	Indian J. Paediatr	58	341-44	1991
52.	Kapoor SK, Reddaiah VP	Effectiveness of Measles Immunization on Diarrhoea and Malnutrition related mortality in 1-4 year olds.	Indian J. Paediatr.	58	821-23	1991
53.	Saudan Singh, Kapoor SK, Bhasin V	Breast Feeding practices in rural Haryana.				1991
54.	Reddaiah VP, Kapoor SK	Effectiveness of ARI Control Strategy on Underfive Mortality.	Indian J Paediatr	58	123-130.	1991
55.	Reddaiah VP, Kapoor SK	Epidemiology of Diarrhoea and its implications for providing services.	Indian J. Paediatr	58	205-08	1991
56.	Anand K, Lobo J, Sundaram KR, Kapoor SK	Knowledge and practices regarding diarrhea in rural mothers of Haryana.	Indian Pediatrics	29(7)	914-917	1992
57.	Reddaiah VP, Kapoor SK	Socio-biological factors in underfive deaths in rural area.	Indian J. Paediatr	59	567-571	1992
58.	Kapoor SK, Uma Kapuria	Tetanus Neonatorum - How to prevent it.	Bulletin of Neonatology			1992

59.	Malaviya AN, Kapoor SK, Singh RR, Kumar A, Pande I	Prevalence of rheumatoid arthritis in the adult Indian population.	Rheumatol Int.	13	131-134	1993
60.	Malaviya AN, Singh RK, Singh YN, Kapoor SK, Kumar A	Prevalence of SLE in India.	Lupus	2		1993
61.	Anand K, Kapoor SK, Pandav CS	Cost analysis of a primary health centre in northern India.	Natl Med J India	6(4)	160-163	1993
62.	Reddaiah VP, Kapoor SK	Management of ARI for Control of Mortality in Underfives.	Indian J. Pediatr	60	283-288	1993
63.	Anand K, Sundaram KR, Lobo J, Kapoor SK	Are diarrhoeal incidence and malnutrition related in under five children? A longitudinal study in an area of poor sanitary conditions.	Indian Pediatrics	31(8)	943-948	1994
64.	Kapoor SK, Anand K, Guresh Kumar	Initiation of contraception in the post-partum period.	Journal of Family Welfare,	40(1)	58-62	1994
65.	Kapoor SK, Anand K, Kumar G	Risk factors for stillbirths in a secondary level hospital at Ballabgarh, Haryana: a case control study.	Indian J Pediatrics	61(2)	161-166	1994
66.	Amit K Verma, Amit Vohra, Anirban Maitra, Manjari Banerjee, Reetu Singh, Sumeet K Mittal, Vidhuti Bharadwaj, Vikas Batra, Anuj Bhatia, Parul Aggarwal, Vidushi Sharma, Rohit Saxena, Kapoor SK	Epidemiology of Chronic Suppurative Otitis Media and Deafness in a Rural Area and Developing an Intervention Strategy	Indian Pediatr	62	725-729	1995
67.	Anand K, Pandav CS, Kapoor SK, Kumar G, Nath LM	Cost of health services provided at a primary health centre.	Natl Med J India	8(4)	156-161	1995
68.	Bir Singh, Kapoor SK	Tuberculosis: Problem of case detection and an innovative solution. Indian J of Pre & Soc Med,		26(1, 2)	14-18	1995
69.	Kapoor SK, Anand K, Kumar G	Prevalence of tobacco use among school and college going adolescents of Haryana.	Indian J Pediatrics	62(4)	461-466	1995
70.	Reddaiah VP, Kapoor SK	Acute Respiratory infection in under fives: Experience at Comprehensive Rural Health Services Project, Ballabgarh.	Indian Journal of Community Medicine	20	13-18	1995
71.	Anand K, Goswami K, Kapoor SK	Dropout rates after first dose in a two dose measles vaccination at an immunization clinic in northern India.	Indian Pediatrics	33(9)	772-774	1996

72.	Ganguli M, Chandra V, Gilby JE, Ratcliff G, Sharma SD, Pandav R, Seaberg EC, Belle S	Cognitive test performance in a community-based non-demented elderly sample in rural India: the Indo-U.S. Cross-National Dementia Epidemiology Study.	Int Psychogeriatr.	8(4)	507-24	1996
73.	Kapoor SK, Anand K, Shamanna BR, Mullick AK	Time utilisation pattern of staff of two primary health centres in Ballabgarh, Haryana.	Indian J Public Health	40(4)	112-119	1996
74.	Kapoor SK, Kumar G, Anand K	Use of mid-arm and chest circumferences to predict birth weight in rural north India.	J Epidemiol Community Health	50(6)	683-686	1996
75.	Anand K, Kant S, Kumar G, Kapoor SK	Thirty-year trend (1967-1996) in prevalence of poliomyelitis and vaccine coverage in Ballabgarh, Haryana, India.	J Epidemiol Community Health	52(12)	823-825	1998
76.	Chandra V, Ganguli M, Pandav R, Johnston J, Belle S, DeKosky ST	Prevalence of Alzheimer's disease and other dementias in rural India: the Indo-US study.	Neurology	51(4)	1000-8	1998
77.	Goswami K, Anand K, Lobo J, Kapoor SK	Community based learning of medicine at AIIMS, India.	Education for Health	11(3)	327-335	1998
78.	Ratcliff G, Ganguli M, Chandra V, Sharma S, Belle S, Seaberg E, Pandav R	Effects of literacy and education on measures of word fluency.	Brain Lang.	61(1)	115-22	1998
79.	Reddaiah VP, Kapoor SK	Effectiveness of ARI Control Strategy on Underfive Mortality	Indian J Pediatr	58	123-130	1998
80.	Anand K, Kant S, Kapoor SK	Nutritional status of adolescent school children in rural North India.	Indian Pediatrics	36(8)	810-815	1999
81.	Anand K, Kant S, Kumar G, Goswami K, Pattanaik D, Kaushik PV, Pandav CS, Kapoor SK	Screening for chronic impairments using medical interns in rural Haryana, India.	Natl Med J India	12(6)	261-265	1999
82.	Anand K, Kant S, Kumar G, Kapoor SK	Clinical case definition of malaria at a secondary level hospital in northern India.	Southeast Asian J Trop Med Public Health	30(2)	243-245	1999
83.	Fillenbaum G, Chandra V, Ganguli M, Pandav R, Gilby JE, Seaberg EC, Belle S, Baker C, Echement DA, Nath LM	Development of an activities of daily living scale to screen for dementia in an illiterate rural older population in India.	Age Ageing.	28(2)	161-8.	1999

84.	Ganguli M, Dube S, Johnston JM, Pandav R, Chandra V, Dodge HH	Depressive symptoms, cognitive impairment and functional impairment in a rural elderly population in India: a Hindi version of the geriatric depression scale (GDS-H).	Int J Geriatr Psychiatry.	14(10)	807-20	1999
85.	Anand K, Kant S, Kumar G, Kapoor SK	"Development" is not essential to reduce infant mortality rate in India: experience from the Ballabgarh project.	J Epidemiol Community Health	54(4)	247-253	2000
86.	Anand K, Kumar G, Kant S, Kapoor SK	Seasonality of births and possible factors influencing it in a rural area of Haryana, India.	Indian Pediatrics	37(3)	306-312	2000
87.	Ganguli M, Chandra V, Kamboh MI, Johnston JM, Dodge HH, Thelma BK, Juyal RC, Pandav R, Belle SH, DeKosky ST	Apolipoprotein E polymorphism and Alzheimer disease: The Indo-US Cross-National Dementia Study.	Arch Neurol	57(6)	824-30	2000
88.	Kumar G, Anand K, Kant S, Kapoor SK	Scale for identification of "at risk" families for underfive deaths.	Indian J Pediatrics	67(6)	411-417	2000
89.	Pattanaik D, Lobo J, Kapoor SK, Menon PS	Knowledge and attitudes of rural adolescent girls regarding reproductive health issues.	Natl Med J India	13(3)	124-8	2000
90.	Singh KB, Anand K, Krishna T, Kant S, Ray T, Kapoor SK	An Outbreak of Malaria In a Village in Faridabad District, Haryana.	Indian J Malariology	37 (3, 4)	106-110	2000
91.	Anand K, Pandav CS, Kapoor SK	Injection use in a village in north India.	Natl Med J India	14(3)	143-144	2001
92.	Chandra V, Pandav R, Dodge HH, Johnston JM, Belle SH, DeKosky ST, Ganguli M	Incidence of Alzheimer's disease in a rural community in India: the Indo-US study.	Neurology	57(6)	985-9	2001
93.	Kapoor SK Anand, K	Newborn health agenda: do we need another worker?	Natl Med J India	14(2)	119-120	2001
94.	Kapoor SK, Kumar G, Pandav CS, Anand K	Performance of surrogate markers of low birth weight at community level in rural India.	J Epidemiol Community Health	55(5)	366-367	2001
95.	Kapoor SK, Kumar G, Pandav CS, Anand K	Incidence of low birth weight in rural Ballabgarh, Haryana.	Indian Pediatrics	38(3)	271-275	2001
96.	Pokharel PK, Kabra SK, Kapoor SK, Pandey RM	Risk factors associated with bronchial asthma in school going children of rural Haryana	Indian J Pediatr	68(2)	103-6	2001
97.	Thelma BK, Juyal RC, Dodge HH, Pandav R, Chandra V, Ganguli M	APOE polymorphism in a rural older population-based sample in India.	Hum Biol.	73(1)	135-44	2001

98.	Anand K, Kant S, Samanta Ray JC, Kapoor SK	Passive malaria surveillance in a low endemic area of India: Validation of a clinical case definition.	Natl Med J India	15(4)	199-201	2002
99.	Anand K, Pandav CS, Kapoor SK	Consensus and Conflicts in Health sector reform in India – A Delphi study.	Natl Med J India	15(4)	221-225	2002
100.	K Anand, CS Pandav, SK Kapoor	Cost of Services in a Sub-district level Hospital in Northern India	J. of Academy of Hospital Administration	14(2)	12-Jul	2002
101.	Kabir Z, Long J	Child mortality rates in rural India: an experience from the Ballabgarh project.	J Trop Pediatr	48(3)	178-80	2002
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139.	Baridalyne Nongkynrih, Anita Acharya, Lakshmy Ramakrishnan, Ritvik	Profile of Biochemical Risk Factors for Non Communicable Diseases in Urban, Rural and Peri-urban Haryana, India	JAPI	56	165-170	2008

8. AN OVERVIEW OF THE RESEARCH ACTIVITIES AT BALLABGARH

Ballabgarh project has a special place in almost everyone's heart if he or she has passed through it. It has a friendly charm that captivates them in keeping with its Motto "work hard and enjoy harder".

Apart from its social contributions, the main criterion on which the posting is evaluated is obviously for its academic contribution. Over the last forty odd years, each year about fifty undergraduate students and three to five postgraduates have passed through its portals to a successful career. All look back to their stay at Ballabgarh with fondness and nostalgia not only for its social activities but equally for the learning that occurred there. This is especially true for postgraduates who owe almost their entire practical clinical and public health skills to their posting at Ballabgarh.

For the students of community medicine, the community is the laboratory. In other words, the community and the health facilities that are a part of the Comprehensive Rural Health Services Project (CRHSP), serve as a laboratory for conduct of different experiments. The population covered by Ballabgarh project must easily be one of the, if not the most, researched community in India. Unfortunately it has yet to compare with other global contenders like Matlab in Bangladesh or Framingham in U.S.A. While it does show that we have a long way to go to reach that status (do we want to go there?), it points to the need for doing more collaborative research especially with international partners. Before we go further let us look more closely into the research publication arising out of Ballabgarh.

The list has been compiled through electronic search of Pub med central and Medind as well as through the records available. It is quite possible that this list misses out some of the publications. This list only includes those publications which are based on actual work done or experiences at Ballabgarh. This list would not include other studies done by faculty posted at Ballabgarh like say, review articles.

A total of 139 publications were located over the last thirty nine years since the publication of the first article in 1969.

The numbers of publications in different period since 1969 are presented in Table 8.1. This comes to an average of 3.7 article per year. However, there is definite increase in the publication in the recent years. It has grown from about one article per year to about seven to eight per year in more recent times. This is indeed very encouraging

Table 8.1. Number of publications from Ballabgarh

Period of Publication	Frequency	Percentage
1969-1973	4	2.8
1974-1978	8	5.8
1979-1983	9	6.5
1984-1988	20	14.4
1989-1993	21	15.1
1994-1998	17	12.2
1999-2003	33	23.8
2004- 2008	27	19.4
Total	139	100

The areas of research show a considerable variation. The classification is based on the judgment as to which category the article belongs as many articles could be classified in more than one category. The number of publications for the period 1969 to 2008 classified by research areas is given in Table 8.2. However, keeping in mind this limitation, child health takes the pride of place with almost a quarter of the publications related to it. This might reflect the general focus of health system in the country on MCH as well as due to the fact that a pediatric public health expert was at its helm for a long period. Women's health and infectious diseases also take their rightful place under the sun. While non-communicable diseases also constituted almost a third of the publications, they are primarily due to two surveys - one on Alzheimer's disease and the other on neurological diseases. Demographic surveillance and operational research have also been important areas of research. One notable area that is missing is the HIV/AIDS. As per the information available with us, HIV prevalence is very low and only

occasional cases of AIDS are reported.

Table 8.2 Research areas of Publications from Ballabgarh 1969-2007.

Area of Research	Frequency	Percentage
Child Health	33	23.8
Communicable Diseases	17	12.4
Demographic Surveillance	8	5.7
IT in health	3	2.1
Medical Education	6	4.2
NCDs	29	21.0
Operational Research	16	11.5
Primary Health Care	3	2.1
Women's Health	16	11.5
Miscellaneous	8	5.7
Total	139	100

9. Research at CRHSP, Ballabgarh: Future Directions

9.1 Research-friendly attributes of CRHSP, Ballabgarh (CRHSPB)

The following unique features of CRHSPB make it eminently suitable for conducting useful research studies at the community and institutional levels:

9.1.1 Rapport with the community

During the last four decades, excellent rapport has been established with the people inhabiting the villages of the Intensive Field Practice Area. This population of 84000+ well recognizes the contribution of the AIIMS towards their health and well-being, through the network of Primary Health Centres and Sub-centres. The field staff at these centers has wide acceptance and recognition in the community.

9.1.2. Health Management Information System

Since more than ten years, demographic and health details of every individual in the field practice area is easily accessible through an electronic database. This information is regularly updated every month, and by an annual census.

9.1.3. Residential training program

Medical undergraduates, interns and nursing students are posted here on a residential basis as part of their training. This offers an excellent opportunity to conduct pedagogical studies on training methodologies geared toward national health priorities.

9.1.4. Faculty

The faculty members have a wealth of experience in conducting community-based studies. Areas of interest of the faculty are all-encompassing, and include health promotion, communicable and non-communicable diseases, health economics, epidemiology, reproductive and child health, ageing, nutrition, micronutrient deficiencies, among others. The faculty actively collaborates with researchers, both in India and from overseas.

9.1.2. Referral system

The primary health care services at CRHSPB are amply supported by a strong and well-organized referral system. The 60-bedded hospital at Ballabgarh serves as a referral center for patients requiring specialist services. This makes a strong case for follow-up studies and health systems research.

9.1.3. Location

CRHSPB hospital is located in District Faridabad, which has witnessed a significant demographic transition during the last three decades. Two-thirds of its population now resides in the urban areas. This change is likely to happen to other districts across the country, albeit gradually, as the socio-economic development gathers momentum. Research can be carried out in both urban as well as rural areas, the results of which may have wide future applications.

9.2 Future directions of research at CRHSP, Ballabgarh

Any research activity that provides robust scientific information for the betterment of humankind is welcome at CRHSPB. A few potential areas that require attention are elucidated below, in alphabetical order.

9.2.1. Behaviour Change Communication

Health promotion and preventive measures require communication of appropriate information to the people to bring about behavioral changes leading to prevention of diseases and improved quality of life. This is especially true for the non-communicable diseases which are assuming alarming proportions in our country, as a result of changing life styles and urbanization. Effect of such health educational intervention needs to be assessed over months and years, before wider application of the same can be recommended.

9.2.2. Congenital disorders

Attention needs to be given to the congenital disorders, which may go either unrecognized or untreated. Information on magnitude, and identification of risk factors, if any, is required for the institution of appropriate preventive and curative measures.

9.2.3. Diseases of ageing

With increased graying of the population, the numbers of elderly are growing rapidly. This is a unique group, both in terms of their physiological changes, as well as their socio-economic profile. Limited community-based data is available on their health needs, disabilities, accessibility and utilization of health care services. Studies need to be conducted to generate information on this group, to enable advocacy and provide evidence base to facilitate institution of control measures.

9.2.4. Health Economics

Resource allocation requires prioritization. One of the tools to accomplish this is estimation of cost-effectiveness of health interventions. Such studies need to include not only measures targeting specific disease, but also broader measures such as clean water supply, environmental sanitation and control of atmospheric pollution. Equally important are issues of sustainability of health care services. Various models need to be developed and tried in the community for generation of resources for health care and local management. Locally acceptable health insurance schemes need to be piloted.

9.2.5. Impact Assessment and evaluation studies

Impact assessment is usually recommended after the intervention has been in place for a few years. A prerequisite is ensuring implementation of the intervention on a continuous basis. CRHSPB field practice area is adequately suited for such impact assessment studies, as long term intervention can be ensured and monitored by the researchers within reasonable resources. Such studies need to be conducted for assessing the impact and evaluation of various national health programmes.

9.2.6. Longitudinal studies

A large captive population and well-established health management information system provide an excellent opportunity for studies on incidence and risk factors. Participants can be followed up with ease. The results of such studies provide a launching pad for control measures against the modifiable risk factors.

9.2.7. *Non-communicable diseases*

Non-communicable diseases have gained considerable importance during the last two decades, both due to the high morbidity and mortality that they cause, as well as because health promotion and preventive measures targeting them are quite rewarding. Studies on estimation of magnitude, risk factors, and outcomes of interventions are required. Development of risk scoring systems can be very useful for identifying and classification of individuals, and facilitate implementation of need-based interventions. They would be important tools for monitoring of progress, and could be used as a do-it-yourself kit.

9.2.8. *Operational research*

Often, there are various methods that can be used at the community level for promoting a given health intervention. It is crucial to identify the one that is most likely to reap the maximal benefits. Operational research provides the answer in such situations. Institutional deliveries are being promoted as one of the measures under the National Rural Health Mission to improving mother and child health and survival. The best way(s) to motivate expectant mothers to come for institutional deliveries need to be identified and applied.

9.2.9. *Quality of health services*

Exit interviews of patients leaving the out-patient and in-patient of health centres provide good information on the perception of the people about the health care system. These, when supplemented with beneficiary assessment studies in the community can go a long way in providing an insight into the quality of health care services that are being provided. Focus group discussions and key informant interviews would be extremely useful.

9.2.10. *Rapid assessment methods*

Population-based cross-sectional studies are among the best methods to collect information on magnitude of diseases. However, they are resource-intensive, and hence have limitations both for nationwide implementation, and for frequent use for the purpose of monitoring and evaluation. Rapid assessment methods provide an affordable alternative. These require less time and money. They can be repeated at periodic intervals for monitoring of health care programmes.

These can be piloted and validated, especially in the field of non-communicable diseases, and outcomes of health interventions.

9.2.11. Research on training of medical undergraduates

The curriculum of medical undergraduate training includes imbibing knowledge and skills to collect field-based data for the formulation of a community diagnosis and appropriate community intervention. Different training methodologies need to be piloted and evaluated to identify the one most suited for achieving these learning objectives.

9.2.12. Telemedicine

Use of telecommunications technology for medical diagnosis and patient care is an option to be considered for providing access to specialist services to our people in the rural areas, where the patient and the specialist are usually separated by large distances. Feasibility and costing studies on its use can provide us with the requisite information for its wider applicability.

9.3 The road ahead.....

Research activities at CRHSPB shall continue to focus on the following:

- They should address national or global health priorities.
- They should contribute to preventable mortality and morbidity.
- They should study conditions that are amenable to known interventions.
- They should address cost-effectiveness and sustainability issues.
- They should have more community participation and management in health care delivery services.

10. Faculty Members at Centre for Community Medicine, AIIMS

10.1. List of Faculty members

Professor and Head Dr. Chandrakant S. Pandav

Professors Dr. Bir Singh
Dr. Shashi Kant
Dr. Sanjeev Kumar Gupta

Additional Professor Dr. Kiran Goswami

Associate Professor Dr. K. Anand

Assistant Professors Dr. Puneet Misra
Dr. Sanjay K. Rai
Dr. Baridalyne N.
Dr. Y. S. Kusuma

10. 1. Brief Curriculum vitae of the faculty are provided in the next few pages



Dr. Chandrakant S. Pandav, Professor and Head

M.B.B.S., M.D., M.Sc., FNAMS, FIAPSM, FIPHA

cpandav@iqplusin.org

*Specialization: Physician, Public Health Specialist, Clinical Epidemiology & Biostatistics,
Health Economics & Health Policy*

Dr. Chandrakant S. Pandav is Professor and Head of Centre for Community Medicine, the All India Institute of Medical Sciences (AIIMS), New Delhi, India.

He is a Physician, Medical Scientist, Public Health Specialists, Epidemiologist and Health Economist. Dr. Pandav completed both his graduation (MBBS) and postgraduate (MD; Community Medicine) from the All India Institute of Medical Sciences, New Delhi. He has also done M.Sc. (Health Economics, Clinical Epidemiology and Biostatistics) from the McMaster University, Hamilton, Canada. He is an alumnus of the Department of Human Nutrition at the London School of Hygiene & Tropical Medicine.

Dr. Pandav has to his credit over 260 publications and presentations in reputed national and international journals, and in various conferences. He has also co-edited 13 books on health sciences and health economics, published by the Oxford University Press, India. He has also been conferred many national and international orations.

Dr. Pandav has worked as a consultant for the WHO, UNICEF, ICCIDD, PAMM and MI at the global, regional (including China, Africa) levels for over 50 countries, and also at the national level in India for the last 25 years.

Though Dr Pandav has been working in the areas of Iodine Deficiency Disorders (IDD) and micronutrients, his other interests include health economics, health policy, health systems research, public-private partnership and rights issues.

In recognition of his contribution in the field of Iodine Deficiency Disorders (IDD) and mother and child nutrition, Dr. Pandav has been elected as a Fellow of many national and international organizations, the most notable being as a Fellow of National Academy of Medical Sciences, Fellow of Indian Public Health Association, and Fellow of Indian Association of Preventive and Social Medicine. He has also received many national and international awards, the most significant being **Dr. M. K. Seshadri Prize and Gold Medal** for the year 2000 by the Indian Council of Medical Research (ICMR). This award is given to eminent scientists or institutions for outstanding research contributions in the field of Community Medicine. Dr. Pandav is currently the Vice President of Indian Public Health Association and Past President of Indian Association of Preventive & Social Medicine.



Dr. Bir Singh, Professor

M.B.B.S., M.D., FNAMS, FIAPSM

birsingh43@gmail.com

Dr. Bir Singh, was born on 05 January 1956. He completed his MBBS (1978) and M.D. (Community Medicine, 1984) – both from the All India Institute of Medical Sciences, New Delhi. He currently is a Faculty Member at AIIMS as Professor in Community Medicine. He also heads the AIDS Education & Training Cell of AIIMS as its Coordinator; is the Programme Coordinator of National Service Scheme Unit and is also the Faculty Incharge of Sex and Marriage counseling at the AIIMS Hospital.

Besides being a Community Health (Public Health) expert, his areas of interest are HIV/ AIDS Prevention; Disease Prevention; Health of Mothers and Children (Reproductive & Child Health); Counselling (Family Welfare; HIV/ AIDS; Sex & Marriage) and Health Communication. He has provided consultancies to many national & international organizations such as WHO, UNICEF, World bank etc.

A prolific writer in English and Hindi, Dr. Bir Singh – apart from having >45 scientific articles & research papers in national and international medical journals – has also authored 23 books & booklets on health topics; more than 250 columns and articles on health in leading magazines and newspapers. He also has been a regular presenter of health programmes on Radio and T.V. with close to 300 programmes to his credit. Through the AIDS Education & Training Cell, Dr. Bir Singh operates a popular telephonic aids Helpline “**Shubhchintak**” (Phone No.011-265 88 333) as well as its internet based AIDS Helpline “**e-Shubhchintak**” (at www.aiims.edu).

His active contribution to his areas of interest has resulted in conferring of 3 National level Awards for him in last 10 years apart from the prestigious Fellowship of Indian Association of Preventive & Social Medicine and Fellowship of National Academy of Medical Sciences. He is also a member of or on the executive councils of many professional bodies as well as on editorial boards of some reputed journals.

Currently, he is the Secretary General of Indian Association of Preventive & Social Medicine.



Dr. Shashi Kant, Professor

M.B.B.S., M.D., MNAMS, MBA,

Masters (Applied epidemiology)

skant76@hotmail.com

Dr. Shashi Kant is Professor at Centre for community medicine, All India Institute of Medical Sciences, New Delhi. He joined AIIMS as a graduate student in 1976 and also completed Post – graduate (Community Medicine) education from AIIMS. He obtained MBA (Health Care Administration) from Delhi University. Dr. Shashi Kant holds Master of Applied Epidemiology degree from National Centre for Epidemiology and Public Health, Australian National University, Canberra, Australia.

Dr. Shashi Kant has worked in the field of HIV/AIDS for more than a decade. He provided technical assistance to National AIDS Control Organization. He has worked as National Consultant at World Health Organization. He has worked as consultant for HIV/AIDS to World Bank, and many national institutions like National Institute for Communicable Diseases.

Currently he is the focal Point at Regional Institute for Central Zone that provides technical support for HIV Sentinel Surveillance in Bihar, Uttar Pradesh, Uttaranchal, Jharkhand, and Delhi. He is member of Technical Resource Group at National AIDS Control Organization.

Apart from HIV/AIDS, Dr. Shashi Kant has interest in Epidemiology. He is member of Ethics Committee of IndiaCLEN, and of National Institute of Medical Statistics. He reviews the scientific articles for many peer-reviewed journals. He has more than 40 articles/monographs/books to his credit.



Dr. Sanjeev K. Gupta, Professor

M.B.B.S., M.D.

sgupta_91@yahoo.co.in

Dr. Sanjeev Kumar Gupta is Professor of Community Medicine at the All India Institute of Medical Sciences, New Delhi. He completed his MBBS and MD (Community Medicine) from the AIIMS. He has more than eighty publications and texts to his credit.



Dr. Kiran Goswami, Additional Professor

M.B.B.S., M.D.

kirancem@hotmail.com

Dr. Kiran Goswami did her MBBS from LHMC, Delhi (Delhi University) in 1984 with house jobs in Medicine (Sucheta Kriplani Hospital) and Paediatrics (Kalawati Saran Children Hospital, Delhi). She Completed MD (Preventive and Social Medicine) from Delhi University in 1988. During her Senior Residency at Lady Hardinge Medical College and associated Hospitals, she worked as In-charge of Rural Posting of Interns at PHC, Palam and Rural Health Training Centre, Najafgarh.

She participated in the First National Review of Immunisation Coverage conducted by National Institute of Health and Family Welfare in May 1989 as a District Team Member and immunization surveys in Delhi 1987-90.

She joined as Lecturer at Mahatma Gandhi Institute of Medical Sciences, Sevagram, Wardha, was Faculty Incharge for orientation camp at Ashti, In charge of Rural Health Training Centre, Anji in 1991 and then Reader in Department and In charge of Paunar Mobile Clinic.

She worked as Assistant Professor at JIPMER, Pondicherry, in 1993 and was Incharge of Rural Health Centre, Ramnathapuram and Faculty Incharge of Undergraduate posting in Department till Oct. 93.

She joined Centre for Community Medicine as Faculty, AIIMS and was posted at Comprehensive Rural Health Services Project at Ballabgarh from 24/10/93. She has been working as Faculty in Centre for Community Medicine, AIIMS since Jan. 1997.

She has been the Chief guide of a number of postgraduate students and has been associated with a number of Research projects in AIIMS. She has been the Resource person for Model Injection Centre Program and India Population Stabilisation Fund. She is an active member of AIIMS Indiaclen Evaluation Team as central Coordinating Team Member involved in planning, implementation, supervision, conduction of FGDs, analysis and report writing for a number of projects including Family Health Awareness Week Programme Evaluation, Intensive Pulse Polio Immunization Programme Evaluation (1999 – 2000), Socio cultural and communication barriers in Polio Eradication Nov. – Dec. 2000, Evaluation of Vitamin A and Iron folate supplementation programme and Injection safety practices to name a few

Currently she is CCT member for IMNCI Evaluation, IPEN and Regional Institute Member for Central Zone, HIV Sentinel Surveillance (looking after Delhi and Uttarakhand)



Dr. K. Anand, Associate Professor

M.B.B.S., M.D, FIAPSM, FIPHA

kanandiyer@yahoo.com

Fields of interest:

Primary health care, Epidemiology and Health economics, Surveillance, Non Communicable Diseases prevention and control, Role of IT in public Health

He was awarded BC Srivastava Award for Best Young Scientist in Community Medicine in India for the year 2000 by Indian Council of Medical Research.

Work Profile

Faculty in Centre for Community Medicine at All India Institute of Medical Sciences, New Delhi since September 1994.

Currently working as Associate Officer and looking after the Comprehensive Rural Health services Project, at Ballabgarh.

- Worked with WHO- SEARO as a Short Term Professional (STP) on NCD Surveillance for over 15 months. During this period, assisted Member Countries in planning and implementing standardized NCD Risk Factor Surveys using STEPS methodology and assisted in development of Global and Regional NCD Infobase.
- Have served as Temporary Adviser to different WHO Meetings in the area of NCDs.
- Member of the National Technical Advisory Group for NCD Surveillance for GOI
- Has been a member of many national and international evaluation teams on diverse areas of work.
- Is a Regular reviewer for Journals like Indian Pediatrics, Indian J of Pediatrics, National Medical Journal of India, Journal of Epidemiology of Community Health, Health Policy, Indian J of Community Medicine.
- Has over seventy publications to his credit including twenty in International Journals.
- Has undertaken about 15 research project funded by ICMR/WHO/INCLIN etc. in the last 10 years



Dr. Puneet Misra, Assistant Professor

M.B.B.S., M.D,

doctormisra@gmail.com

Dr. Puneet Misra is a member of the Medical faculty at the All India Institute of Medical Sciences. He has done his residency in Preventive Medicine and in Pediatrics. He has over ten years of experience as Physician, Researcher, & Teacher of Community Medicine, Epidemiology and Public Health. He has worked at various institutions including Medical colleges at Meerut and Gorakhpur, DDU Hospital, New Delhi, PGIMER, Chandigarh, University of South Carolina, USA, and South Carolina Cancer Prevention Center, USA. He is an active member of various scientific associations. He has also served as a member of the Executive Committee of Indian Association of Preventive and Social Medicine for many years.

Interest areas:

- Diet and nutrition related research and measures of Physical Activity.
- Developing methods for intervention on diet, physical activity, and related factors to prevent Non-communicable diseases.
- Reproductive Health
- Health and Hospital administration, Health Insurance
- Clinical Practice - Family Medicine

Ongoing Research

- Development of Appropriate Prevention and Intervention Strategies for Non-Communicable Nutrition-Related Disorders among Women in Post-Reproductive Period: A Multi-Site Study.
- Strengthening Rural Health Services using IT
- Development of a model for integrated management of Non-Communicable diseases through existing health system in India
- School-Based Healthy Lifestyle Program in Ballabgarh

Completed Research

- Reliability and Validity of GPAQ and IPAQ
- Effect of consumption of micronutrient-fortified candies on iron and vitamin A status of children aged 3-6 years in Rural Haryana
- A study of knowledge, beliefs, and attitudes about AIDS & Human sexuality among Medical, Engineering & University under graduates.



Dr Sanjay K. Rai, Assistant Professor

M.B.B.S, M.D

drraisanjay@rediffmail.com

Dr. Sanjay K. Rai is a member of the Medical faculty at the All India Institute of Medical Sciences. He has done his residency in Preventive Medicine from Department of Preventive & Social Medicine (PSM), Institute of Medical Sciences, BHU, Varanasi. Before joining as faculty at AIIMS he has worked in the department of Preventive and Social Medicine at various institutions including Maulana Azad Medical College, New Delhi, Banaras Hindu University at Varanasi and Government Medical college at Chandigarh .

Research Activities:

- Senior Investigator: “Model Injection Center – A programme to Improve injection practices in the country” (IPEN, GOI and states governments.)
- Co-Investigator: “Prevalence of Rheumatic Disorder in Ballabgarh tehsil, Faridabad” funded by Bone & Joint Decade India (Department of Medicine & CCM, AIIMS).
- Co-investigator “Congenital CMV infection in offspring of immune mothers” (ICMR)
- Team Member “Integrated management of Neonatal & Childhood Illnesses: Baseline assessment of childhood morbidity & mortality in selected districts” (India CLEN)
- Co investigator “Social Determinants for effective Implementation of UIP & Polio Eradication Programmes in Moradabad & JP Nagar Districts, UP-an IPEN study” (WHO)
- Participated as government nominee and expert in “UIP assessment review in six states (Bihar, UP, MP, Jharkhand, Orissa & Rajasthan) of India”. GOI WHO, UNICEF,
- Senior Investigator of “Evaluation of Universal Immunization Program in India 2004 – 2005” undertaken by the India CLEN Program Evaluation Network,
- Co-investigator of “STD facility survey of Varanasi, Jaunpur, Mirzapur, Ghazipur, Azamgarh and Ballia districts of Uttar Pradesh”, State AIDS Control Society, U.P.
- Co – investigator of DST sponsored “An Intervention Study of nutritional and eating practices among Adolescents in Chandigarh

- Co-investigator of “STD facility survey of Varanasi, Jaunpur, Mirzapur, Ghazipur, Azamgarh and Ballia districts of Uttar Pradesh”, State AIDS Control Society, U.P.
- Co-investigator “Drug Indicator Survey of U.P.” (World Bank)
- Participated in the “Coverage Evaluation of National Pulse Polio Programme” in slum areas, Varanasi
- Reviewer of various public health journals e.g. Indian Journal of Community Medicine, Indian Journal of Public Health, Health and Population perspective and issues etc.

Recent Significant events

- Elected “*Central Council Member*” (north zone) of IPHA for the year 2007 – 2009
- Nominated by INDEPTH secretariat as “Member Technical Advisory Group for Reproductive Health” during 6th AGM at Ouagadougou, Burkina Faso.
- Member “Multidisciplinary Core committee for DOTS therapy in Tuberculosis” All India Institute of Medical Sciences, New Delhi.
- Member Central Zone for HIV /AIDs sentinel surveillance in India,
- Drafted a module on “Camp services including food, water and sanitation - a module used by district and sub-district level health management teams” in 2006 for WHO Collaborating Centre for disease preparedness, All India Institute of Hygiene and Public health, Kolkata
- Member expert group under National Rural Health Mission for Ministry of Health and Family welfare, Government of India on “Indian Public Health Standards” for District and Sub-divisional Hospital in India.



Dr. Baridalyne Nongkynrih, Assistant Professor

M.B.B.S., M.D,

bari_111@yahoo.com

Experience :

1. Currently working as Assistant Professor, Community Medicine, AIIMS New Delhi since June 2003 till date.
2. Worked as Senior Resident in Community Medicine in AIIMS from April 2000 to April 2003.

Area of interest: Non-communicable diseases, Primary Health Care, Cancer-Control, Medical Education.



Dr. Yadlapalli S. Kusuma, Assistant Professor

MSc., PhD, Dip (Applied Statistics)

kusumays@gmail.com,

Dr. Y.S. Kusuma is a faculty member at the Centre for Community Medicine of AIIMS since 2005. Previously she was in Andhra University and Utkal University as doctoral and post-doctoral fellows, respectively. Her research interests are cultural epidemiology of hypertension, qualitative research, in addition to social and behavioural health research.

Specialization: Medical Anthropology, Qualitative Research, Social and behavioural aspects of health and healthcare.

Research projects undertaken:

1. Epidemiology of blood pressure across a few cross-cultural populations of Visakhapatnam district, Andhra Pradesh (funded by Council of Scientific and Industrial Research (CSIR), New Delhi).
2. Blood pressure and its correlates among urban communities of Bhubaneswar city (funded by CSIR, New Delhi).
3. Blood Pressure epidemiology in tribal, rural and urban slum and urban rich communities of Orissa with special reference to physical and social parameters (funded by CSIR, New Delhi).
4. Social and cultural dimensions of hypertension among neo- and settled-migrants in Delhi: a preliminary study (funded by All India Institute of Medical Sciences, New Delhi).

Memberships in Professional bodies:

1. Life Member, Indian Society for Human Genetics
2. Life Member, International Association for Human Biologists
3. Life Member, S.C. Roy Institute of Anthropological Studies
4. Life Member, All India Association for Applied Research on Obesity
5. Life Member, Indian Association for Preventive and Social Medicine
6. Member, American Anthropological Association
7. Member, Indian Society for Medical Statistics
8. Member, Nutritional Society of India
9. Member, Anthropological Association of Orissa



